DPS-F7

SERVICE MANUAL

REVISED

US Model
Canadian Model
AEP Model
UK Model
E Model

DPS-F7 has similar specification with DPS-M7(9-956-852-11).only the different points from the service manual for DPS-M7 are described in this service manual.
Please refer to the service manual for DPS-M7 together with this one when servicing.

SPECIFICATIONS

A/D converter	18 bit oversampling stereo A/D converter
D/A converter	Advanced pulse D/A converter
Sampling frequency	48 kHz

Input

Connector type	Reference input level	Max. input level	Input impedance	Circuitry type
XLR-3-31 equivalent	+4 dBs	+24 dBs	10 kilohms	Balanced
Phone jack	−10 dBs	+10 dBs	50 kilohms	Unbalanced

XLR-3-31 equivalent connector (1: GND 2: HOT 3: COLD)

Output

Connector type	Reference output level	Max. output level	Suitable load impedance	Circuitry type
XLR-3-32 equivalent	+4 dBs	+24 dBs	Over 600 ohms	Balanced
Phone jack	−10 dBs	+10 dBs	Over 10 kilohms	Unbalanced

XLR-3-32 equivalent connector (1: GND 2: HOT 3: COLD)
0 dB = 0.775 Vrms

Frequency characteristics	10 Hz – 22 kHz $^{+0}_{-1.0}$ dB
S/N	Over 97 dB*
Dynamic range	Over 97 dB
Distortion rate	Under 0.0035% (at 1 kHz)

Memory	
Preset memory	100 types
User memory	Max. 256 types
Power requirement	USA and Canadian model 120 V AC, 60 Hz UK model 240 V AC, 50/60 Hz (adjustable with a voltage selector) Continental European model 230 V AC, 50/60 Hz (adjustable with a voltage selector)
Power consumption	27 W
Dimensions	Approx. 482 × 44 × 320 mm (w/h/d) (19 × 1 3/4 × 12 5/8 inches) (excluding projections)
Weight	5.0 kg (11 lb 1 oz)
Accessories supplied	Power cord (1) Preset memory list (1)

* Measured at the digital full scale level

Design and specifications are subject to change without notice.

Note:
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

DIGITAL DYNAMIC FILTER PLUS

SONY®

The DPS-F7 Digital Dynamic Filter Plus is a new signal effector using innovations in signal processing, based on digital filter technology. The ten types of algorithms create a superior sound environment considerably exceeding the possibilities available through conventional effectors.

Quality-conscious design with high-performance A/D and D/A converters
The DPS-F7 converts an incoming analog signal to a digital signal and outputs as an analog signal after passing it through various effect processes. The determining factor for the sound quality is the conversion mechanism which incorporates an18-bit oversampling stereo A/D converter and a 49.152 MHz clock advanced pulse D/A converter, which together results in highly accurate effects with little deterioration of quality.

User-friendly and comfortable operation
The large size backlit LCD of 40 characters by 2 lines enables smooth operation while viewing the operating condition in real time. The on-line manual (in English) can be displayed on the LCD so operation instructions are immediately available.

Abundant preset memories
The DPS-F7, in its preset memory, has a hundred different effects created by musicians, sound mixers and acoustic engineers around the world . This will therefore enable you to select and replay the desired effects for a particular purpose immediately.

Creation of any kind of sound
The EDIT function allows you to change the preset effects or create your original effects. Aside from the preset memory of 100 effects, the DPS-F7 also has a user memory in which up to 256 additional effects can be saved, giving quick access to an even greater variety of effects.

Wide range of effects
The DPS-F7 is equipped with an effector which processes and output signals, a vocoder which modulates input signals to one channel according to those on the other channel, and a synthesizer which produces sounds by MIDI signals.
In addition to these three fundamental functions, a newly developed algorithm, based on advanced digital filter technology, enables you easily to create a wide range of effects and synthesizer sounds.
It is also easy to modify the effects, since the effect block where the effects are modified is divided into sections, under which you can easily find the parameters you want to change.

Remote control
A remote controller (RM-DPS7) is also available separately.

Two I/O terminal systems
The DPS-F7 is equipped with XLR connectors (balanced type) and phone jacks through which you can connect musical instruments, recording equipment and PA (public address) equipment.

Linkage with MIDI equipment
Since the DPS-F7 is equipped with MIDI functions, memory numbers of this unit can be selected with program change signals of the MIDI device, such as a keyboard. Moreover, since effect level, etc. can be controlled by key touch and control change signals, the unit is highly effective as an effector for digital musical instruments. Automatic performance is also possible by controlling with computers having the MIDI interface, or with a MIDI sequencer.

- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

EXPLODED VIEWS

Page	Ref. No.	Part No.	Description	Remak
30	1	4-941-151-31	PANEL	
	4	4-941-144-31	PLATE, INDICATION	
	12	4-916-320-01	PLATE, BOTTOM	
31	* 55	A-4347-623-A	MAIN BOARD, COMPLETE	

ELECTRICAL PARTS LIST

Page	Ref. No.	Part No.	Description	Remak
36	IC512	8-759-084-27	IC HN27C101AG-F7	
40		3-755-581-11	LIST、 PRESET MEMORY	
		3-755-580-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH)	
		3-755-580-41	MANUAL, INSTRUCTION (GERMAN,SPANISH)	

9-957-343-12

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DPS-M7

SERVICE MANUAL

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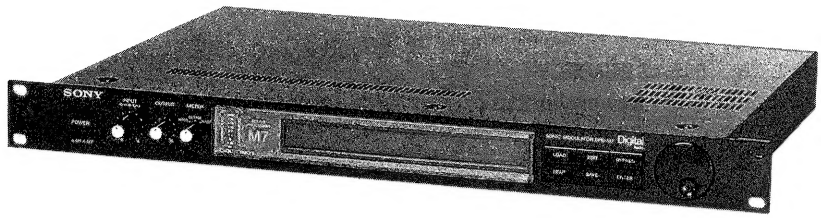

SPECIFICATIONS

A/D converter 18 bit oversampling stereo A/D converter
D/A converter Advanced pulse D/A converter
Sampling frequency 48 kHz

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XLR-3-31 equivalent	+4 dBs	+24 dBs	10 kilohms	Balanced
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XLR-3-31 equivalent connector (1: GND 2: HOT 3: COLD)

Output

Connector type	Reference output level	Max. output level	Suitable load impedance	Circuitry type
XLR-3-32 equivalent	+4 dBs	+24 dBs	Over 600 ohms	Balanced
Phone jack	–10 dBs	+10 dBs	Over 10 kilohms	Unbalanced

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Frequency characteristics
10 Hz — 22 kHz $^{+0}_{-1.0}$ dB
S/N Over 97 dB
Dynamic range Over 97 dB
Distortion rate Under 0.0035% (at 1 kHz)

Memory
Preset memory 100 types
User memory Max. 256 types
Power requirement USA and Canadian model
120 V AC, 60 Hz
UK model
240 V AC, 50/60 Hz
(adjustable with a voltage selector)
Continental European model
230 V AC, 50/60 Hz
(adjustable with a voltage selector)
Power consumption 27 W
Dimensions Approx. 482 X 44 X 320 mm (w/h/d)
(19 x 1 3/4 x 12 5/8 inches)
(excluding projections)
Weight 5.0 kg (11 lb 1 oz)
Accessories supplied
Power cord (1)
Preset memory list (1)

Design and specifications are subject to change without notice.

Note:
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

使用時は添付資料も参照のこと
Refer to the additional documents.

DIGITAL SONIC MODULATOR

SONY®

TABLE OF CONTENTS

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Overview of the DPS-M7

The DPS-M7 is a digital sonic modulator developed with the wealth of digital and audio technology accumulated over the years by Sony, innovater of the highly acclaimed Digital Reverberator DRE-2000 and MU-R201.

Quality-conscious design with high-performance A/D and D/A converters
The DPS-M7 converts an incoming analog signal to a digital signal and outputs the signal again after passing it through various effect processes and reconverting it into an analog signal. The determining factor for the sound quality is the conversion mechanism that adopts the 18-bit oversampling stereo A/D converter and the 49.152 MHz clock advanced pulse D/A converter, which results in highly accurate effects with little deterioration of quality.

User-friendly and comfortable operation
The large size backlit LCD of 40 characters by 2 lines enables smooth operation while viewing the operating condition in real time. Since the LCD also has an on-line manual function (in English), information necessary for operation can be displayed.

Abundant preset memories
The DPS-M7, in its preset memory, has a hundred variations of effects created by musicians, sound mixers and acoustic engineers around the world . This will therefore enable you to select and replay the desired effects for a particular purpose immediately.

Creation of any kind of sound
The EDIT function allows you to change the preset effects or create original effects. Aside from the present preset memory of 100 effects, the DPS-M7 also has a user memory in which up to 256 effects can be freely saved. Using this memory will enable more varicolored play effects.

Wide range of effects
To obtain various effects, the DPS-M7 processes signals with seven blocks consisting mainly of the modulation block, plus the input block, pre-effect blocks 1 and 2, post effect block, envelope block and output block.
One of the 20 algorithms available in the modulation block can be used. One of the 5 algorithms available in pre-effect 1 and 2 blocks can be used. One of the 4 algorithms in post-effect block and one of the 3 algorithms in the envelope blocks can be used. (Algorithms "OFF" are excluded.)
Variegated effects matching the input source can be obtained by combinations of the seven blocks and combinations of the algorithms in the blocks.

Remote control is possible
Remote control of the panel operation is possible by means of the separately available remote controller (RM-DPS7).

Two I/O terminal systems
The DPS-M7 is equipped with XLR connectors (balanced type) and phone jacks to which musical instruments, recording equipment and PA (public address) equipment can be connected.

Linkage with MIDI equipment
Since the DPS-M7 is equipped with MIDI functions, memory numbers of this unit can be selected with program change signals of the MIDI device such as a keyboard. Moreover, since effect level, etc. can be controlled by key touch and control change signals, the unit is highly effective as an effector of digital musical instruments. Automatic performance is also possible by controlling with computers having the MIDI interface and with a MIDI sequencer.

Glossary

Parameter
A number of elements are involved in creating each effect. One effect is obtained only after determining the values of the elements required. Each of these elements is called a parameter.

Indirect parameter
This is a parameter that can be changed according to preset rules while editing. "scale" and "sync" are typical examples. This is not an actual parameter (parameter that can be saved) but is a convenient parameter that can be changed in multiple lots.

Memory
This is an internal memory circuit. The DPS-M7 has a built-in microcomputer that sends the set value of each parameter to the signal processing LSI (DSP) to create the various effects. If the data of this parameter is stored in the memory, it can be retrieved and used when needed.
The DPS-M7 has 100 preset memories (memory initially set at time of shipment) and a maximum of 256 user memory (memories that are available to the user).

Temporary buffer
This is a place where the parameter of each effect is loaded and edited. Each effect is reproduced by the parameters called into this temporary buffer.

Load
Calling the effects stored in the memory is called "to load." The parameters stored in the preset memory and user memory are copied in the temporary buffer and then new parameters are reflected in the DSP. Partial loading of the memory is executed in the B. LOAD block of the edit mode.

Edit
Changing the value of a parameter is called "to edit," and original effects can be created by changing values of parameters in the temporary buffer. This function is to make the effects in the preset memory more effective by conforming with usage conditions and the user's own tastes.

Save
Storing parameters in the temporary buffer as user memory is called "to save" and is an important function to store original effects. Original effects once saved can be freely accessed for editing and saving again.

MIDI
This is the abbreviation for Musical Instrument Digital Interface and is an international standard for data communication between electronic musical instruments. This enables automatic performance by controlling other musical instruments from one keyboard or by using a sequencer and computer. The MIDI function of the DPS-M7 enables selection of memory numbers with MIDI program change numbers (tone quality change signal from the keyboard) and control of parameters by means of the MIDI control change signal (amount of change of the modulation wheel and so on).

Algorithm
A fundamental arithmetic method is required in the internal circuit of the digital sonic modulator to obtain an effect and different arithmetic methods are used such as for chorus effects, pitch effects and flanger effects. Any one of these arithmetic methods is called an algorithm. Great many newly developed algorithms are incorporated in the DPS-M7 for variegated effects far exceeding those available from conventional effectors.

Precautions

On Safety
- To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.
- Before connecting the unit to the power source, check to confirm that the operating voltage of your unit is the same as the local power line voltage. The operating voltage is indicated on the nameplate on the left side of the unit.
- Should anything fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- The unit is not disconnected from the mains (AC power source) as long as it is connected to the mains outlet, even if the unit itself has been turned off.

On Installation
- Allow adequate air circulation to prevent internal heat build-up.
- Do not place the unit on a surface (rugs, blankets, etc.) or near materials (curtains, draperies, etc.) that may block the ventilation holes.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit away from equipment with strong magnets, such as microwave ovens or large loudspeakers.
- Do not place any heavy object on the unit.

On Operation
- When the unit is not in use, turn the power off to conserve energy and to extend its life.

On Cleaning
- Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth slightly moistened with a mild detergent solution.
- Do not use any type of solvents, such as alcohol or benzine, which might damage the finish.

On Repacking
- Do not throw away the carton and packing materials. They make an ideal container to transport the unit.

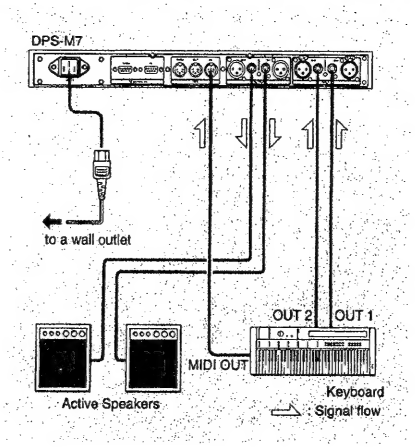
If you have any questions about the unit, contact your Sony service facility.

CAUTION!
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

Hooking Up a System

Turn all the power off before making connections, and connect the AC power cord last.

Fundamental Connections as an Effector

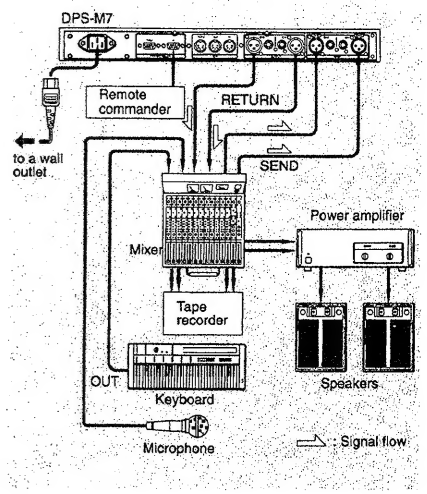


1. Connect a keyboard to the INPUT jacks, or the MIDI IN connector.
2. Connect active speakers to the OUTPUT jacks.
3. Insert the AC power cord firmly into the AC IN jacks.
4. Connect the AC power cord to a wall outlet.

For the model equipped with a voltage selector
Check to confirm that the voltage selector is set to the local power line voltage. If not, set the selector to the correct position before connecting the AC power cord to a wall outlet.

Notes:
- Be sure to insert the plugs firmly into the jacks. Loose connection may cause hum and noise.
- Leave a little slack in the connecting cord to allow for inadvertent shock or vibration.
- Connections with some equipment of which the ouput capacity is very high may result in sound distortion. When this happens, turn the INPUT control to lower the input level of the equipment connected to the DPS-M7.

Fundamental Connections for Recording

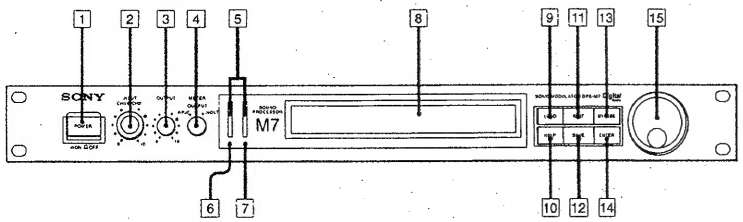


Notes:
- If there is only one channel for the input signal, input to INPUT CH1 and set the input mode in the system block to "mono". This will have the same effect as inputting the same signal into INPUT CH1 and INPUT CH2 with the input mode set to "stereo".
- Always input signals with a reference level of +4 dBs through an XLR-3-31 type connector.
- The reference level of a phone jack is fixed at −10 dBs. Therefore, if the maximum input level of the input signal exceeds +10 dBs, distortion will occur since the amplifier preceding the input volume control clips the signal.
- An optional remote controller RM-DPS7 can be connected to the TO CONTROLLER IN connector to remotely control this unit.

Identifying the Parts

To be continued ►

Front Panel



1 POWER Switch
Turns the unit on and off. When the power is on, the backlight in the display window illuminates and the last indication appears. For a few seconds after turning on the power, the sound being input will be output directly since the bypass function works.

2 INPUT control
Adjusts the input level of individual channels.
The outer control is for channel 1 and the inner control is for channel 2. Since the controls are linked, turn one control while holding the other for adjustment of only one channel. Gain will become 0 dB if this control is turned up to the two o'clock position (largest point on the scale).

3 OUTPUT control
Adjusts the output level. Gain will become 0 dB if this control is turned up to the two o'clock position (largest point on the scale).

4 METER switch
Switches signals to be indicated on the level meter. If the switch is set to INPUT, the input signal level of each channel to the A/D converter will be indicated individually. and, if set to OUTPUT, the output signal level of each channel from the D/A converter will be indicated individually. When set to IN/OUT, the channel 1 signal level being input to the A/D converter will be indicated on CH1 of the level meter and the level of the channel 2 signal output from the D/A converter will be indicated on CH2 of the level meter.

5 Level meter
Indicates the signal level. Adjust the INPUT control so 0 dB lights when a reference level signal is input. A 20 dB head room will be available when 0 dB lights. "OVER" will light if a signal exceeding the head room is input. The level meter remains inactive when the BYPASS button is pressed.

6 MIDI Indicator
Lights when the MIDI program change signal or the control change signal, etc. is received.

7 REMOTE Indicator
Lights when a signal is received from an optionally available remote controller (RM-DPS7).

8 Display window
Memory names, parameter values and messages accessed are displayed on an LCD display of 40 characters by 2 lines. Displayed indications can be easily read in dark halls and studios due to the backlighting.

9 LOAD button
Press to access the memory.

10 HELP button
Press to display various information required for operation. Message will be displayed if this button is pressed.

11 EDIT button
Press to change parameter values of the memory.

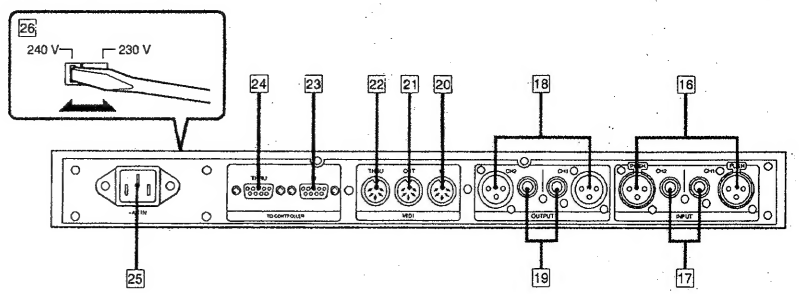
12 SAVE button
Press when storing original effects created by changing parameter values in the user memory.

13 BYPASS button
Press when outputting input signals directly.

14 ENTER button
Press after selecting and setting parameters.

15 Operating dial
Selects preset numbers and/or sets parameters.

Rear Panel



16 INPUT CH1/CH2 terminal (XLR-3-31 connector)
Balanced-type terminals for input of ch1 and ch2.

17 INPUT CH1/CH2 terminal (Phone jacks)
Phone jacks for input of ch1 and ch2.

18 OUTPUT CH1/CH2 terminal (XLR-3-32 connector)
Balanced-type terminals for output of ch1 and ch2.

19 OUTPUT CH1/CH2 terminal (Phone jack)
Phone jacks for output of ch1 and ch2.

* When devices are connected to both XLR connectors and phone jacks, the device connected to the phone jacks will have priority.

20 MIDI IN terminal (DIN 5-pin)
Input terminal for the MIDI signal. For connection to the MIDI OUT (or THRU) terminal of another MIDI device by means of a commercially available MIDI cable.

21 MIDI OUT terminal (DIN 5-pin)
Outputs the MIDI signal generated in this unit.

22 MIDI THRU terminal (DIN 5-pin)
Outputs MIDI signals input from the MIDI IN terminal as is, and can be connected to the MIDI IN terminal of a MIDI device with a commercially available MIDI cable.

23 TO CONTROLLER IN terminal (D-Sub 9-pin)
Terminal to which the remote controller RM-DPS7 (not supplied) is connected to permit remote control of panel operation of the DPS-M7.

24 TO CONTROLLER THRU terminal (D-Sub 9-pin)
Outputs directly the remote controller signals input from the TO CONTROLLER IN terminal. Connect to the TO CONTROLLER IN terminal of other effectors in the DPS series.

25 AC IN terminal
Use the supplied AC power cord and connect it to an AC power outlet.

26 VOLTAGE SELECTOR
(only for UK and European model)
Set the voltage selector to the correct position before connecting the AC power cord to a power outlet.

SECTION 2
LIST OF IC TERMINALS

IC510 CXD2903Q (I/O Control)

Terminal No.	Terminal Name	I/O	Description
1	VDD		+ 5V
2	NC	open	
3	VSS		GND
4	XRD	IN	$\overline{RD}$ input
5	XAS	IN	$\overline{AS}$ input
6	RXRY	OUT	RXRDY plug of remote controller
7	XWAT	OUT	$\overline{WAIT}$ output
8	CK ϕ	IN	ϕ clock input
9	PRES	OUT	Output of positive logic reset
10	XTIM	OUT	$\overline{\text{Chip select}}$ to clock IC
11	XES6	OUT	Optional $\overline{\text{chip select}}$
12	XES7	OUT	Optional $\overline{\text{chip select}}$
13	RIIN	IN	Data input from remote controller
14	RTIN	IN	Data input from remote controller thru
15	RIOT	OUT	Data output to remote controller
16	NC	open	
17	REA	IN	Input of rotary encoder
18	REB	IN	Input of rotary encoder
19	BCKO	OUT	Clock output of baud rate generator
20	BCKI	IN	Baud rate clock input of remote controller I/F
21	VSS		GND
22	NC	open	
23	VDD		+ 5V
24	NC	open	
25	NC	open	
26	SDAT	OUT	Data output to DPS
27	SCK	OUT	Data transmission clock to DPS
28	LT ϕ	OUT	Output port DPS for data latch
29	LT1	OUT	Output port DPS for data latch
30	LT2	OUT	Output port DPS for data latch
31	NC	open	
32	VDD		+ 5V
33	NC	open	
34	PRAM	OUT	Chip select positive logic for SRAM
35	XRAM	OUT	Chip select negative logic for SRAM
36	A19	IN	Address input
37	A18	IN	
38	A17	IN	
39	A16	IN	
40	NC	open	
41	NC	open	
42	VDD		+ 5V
43	NC	open	
44	VSS		GND
45	A15	IN	Address input
46	A12	IN	Address input

IC510 CXD2903Q (I/O Control)

Terminal No.	Terminal Name	I/O	Description
47	A14	IN	Address input
48	NC	open	
49	A13	IN	Address input
50	A6	IN	Address input
51	A8	IN	Address input
52	A5	IN	Address input
53	A9	IN	Address input
54	A4	IN	Address input
55	A11	IN	Address input
56	A3	IN	Address input
57	A2	IN	Address input
58	A10	IN	Address input
59	A1	IN	Address input
60	XROM	OUT	ROM $\overline{\text{chip select}}$
61	A0	IN	Address input
62	VSS		GND
63	NC	open	
64	VDD		+ 5V
65	NC	open	
66	D7	I/O	Data bus
67	D0	I/O	Data bus
68	D6	I/O	Data bus
69	D1	I/O	Data bus
70	D5	I/O	Data bus
71	D2	I/O	Data bus
72	D4	I/O	Data bus
73	D3	I/O	Data bus
74	NC	open	
75	LCDE	OUT	Output E-clock of LCD controller
76	XRES	IN	$\overline{\text{Reset}}$ input
77	XWR	IN	$\overline{\text{WR}}$ input
78	NC	open	
79	NC	open	
80	NC	open	

IC503 CXD2704Q (Microcomputer interface)

Terminal No.	Terminal Name	I/O	Description
1	TSTI	I	Test terminal. Normally fixed to 'L'.
2	VSS	–	Ground terminal.
3	TEST	I	Test terminal. Normally fixed to 'L'.
4	PSSL	I	Test terminal. Normally fixed to 'L'.
5	HA0	I	Test terminal. Normally fixed to 'L'.
6	HA1	I	Test terminal. Normally fixed to 'L'.
7	HA2	I	Test terminal. Normally fixed to 'L'.
8	HA3	I	Test terminal. Normally fixed to 'L'.
9	XRD	I	Test terminal. Normally fixed to 'L'.
10	MCK1	I	Master clock input 1. When this input is to be the master clock, a clock with a frequency that is 4 times the frequency of the command execution is input, and MCK2 is fixed to 'H'.
11	MCK2	I	Master clock input 2. When this input is to be the master clock, a clock with a frequency that is 2 times the frequency of the command execution is input, and MCK1 is fixed to 'H' or 'L'.
12	VSS	–	
13	H16B	I	Test terminal. Normally outputs 'H'.
14	HD0	O	Test terminal. Normally outputs 'H'
15	HD1	O	Test terminal. Normally outputs 'H'
16	HD2	O	Test terminal. Normally outputs 'H'
17	HD3	O	Test terminal. Normally outputs 'H'
18	HD4	O	Test terminal. Normally outputs 'H'
19	HD5	O	Test terminal. Normally outputs 'H'
20	HD6	O	Test terminal. Normally outputs 'H'
21	HD7	O	Test terminal. Normally outputs 'H'
22	HD8	O	Test terminal. Normally outputs 'H'
23	VSS	–	Ground terminal.
24	HD9	O	Test terminal. Normally outputs 'H'
25	HD10	O	Test terminal. Normally outputs 'H'
26	HD11	O	Test terminal. Normally outputs 'H'
27	SIA	I	Two-channel serial data input A.
28	SOA	O	Two-channel serial data output A.
29	BCK	I	Serial data transmission clock.
30	LRCK	I	Sampling rate clock input of serial I/O. Data for CH1 is transmitted in the 'H' section and date for CH2 in the 'L' section.
31	OVR	O	Overflow detection output of the arithmometer. 'L' is output when an overflow is detected.
32	VSS	–	Ground terminal.
33	Vdd	–	Power supply terminal.
34	XCLR	I	Test terminal. Normally fixed to 'H'.
35	SIB	I	Two-channel serial data input B.
36	SOB	O	Two-channel serial data output B.
37	HD12	O	Test terminal. Normally outputs 'H'.
38	HD13	O	Test terminal. Normally outputs 'H'.
39	HD14	O	Test terminal. Normally outputs 'H'.
40	HD15	O	Test terminal. Normally outputs 'H'.

Terminal No.	Terminal Name	I/O	Description
41	–	–	N.C.
42	VSS	–	Ground terminal.
43	–		N.C.
44	–	–	N.C.
45	A0	O	External DRAM address output A0.
46	A1	O	External DRAM address output A1.
47	A2	O	External DRAM address output A2.
48	A3	O	External DRAM address output A3.
49	A4	O	External DRAM address output A4.
50	A5	O	External DRAM address output A5.
51	A6	O	External DRAM address output A6.
52	VSS	–	Ground terminal.
53	A7	O	External DRAM address output A7.
54	A8		External DRAM address output A8.
55	A9		External DRAM address output A9.
56	A10		External DRAM address output A10.
57	TSTJ		Test terminal. Normally fixed to 'L'.
58	SBCK		Test terminal. Normally fixed to 'L'.
59	SLC		Test terminal. Normally fixed to 'L'.
60 – 62	–	–	N.C.
63	VSS	–	Ground terminal.
64 – 67	–	–	N.C.
68	XRAS	O	External DRAM low address strobe output.
69	XWSO	O	External DRAM read/write output. Writes with 'L'. However, when using the delay I/O circuit in the serial I/O mode, serial data is output.
70	DIO	I/O	External DRAM read/write input. However, when using the delay I/O circuit in the serial I/O mode, serial data is input.
71	XCAS	O	External DRAM column address strobe output.
72	VSS	–	Ground terminal.
73	Vdd	–	Power supply terminal.
74	SDTI	I	Microcomputer interface serial data input.
75	SCK	I	Microcomputer interface serial transmission clock.
76	XSLD	I	Microcomputer interface serial data input. latch.
77	XRDY	O	Microcomputer interface transmission ready. Transmission with 'H' not allowed. (SCK input not allowed)
78	SDTO	O	Microcomputer interface serial data output.
79	XCS	I	Microcomputer interface chip selection. At the time of 'H', SCK and XSLD are regarded as 'H' at the same time as the SDTO terminal is set to high impedance condition.
80	–	–	N.C.

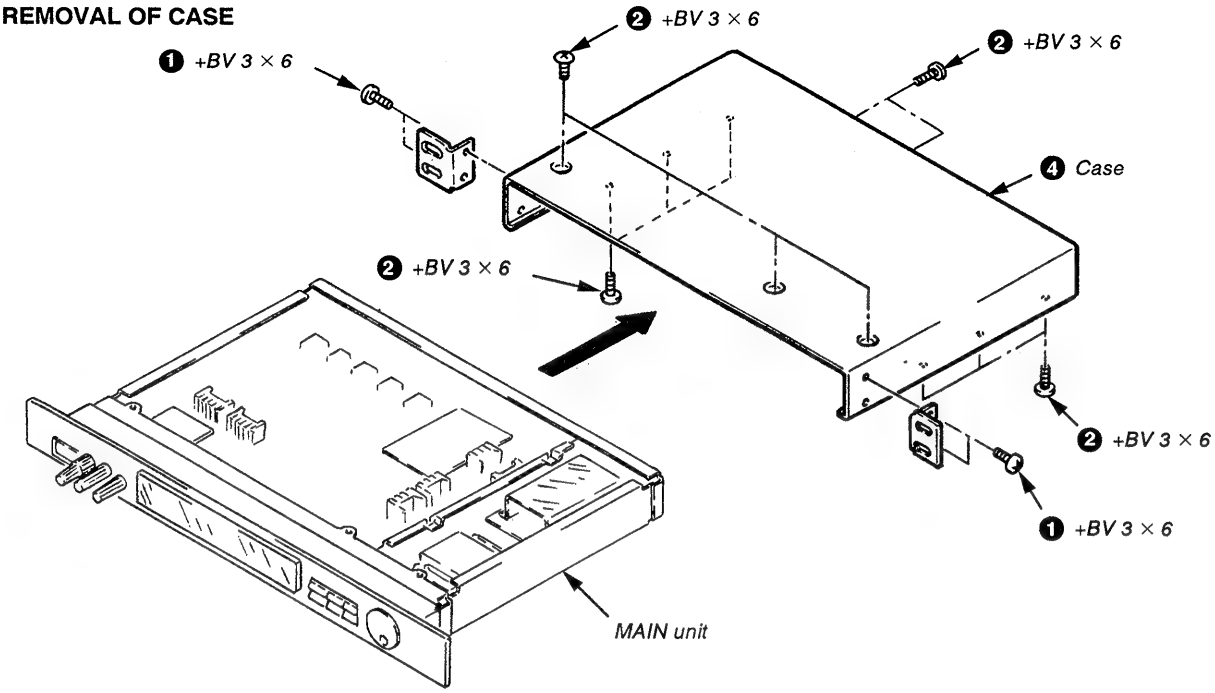
LCD1 Terminal Connecting Diagram

Terminal No.	Terminal Name	Contents	Connection
1	V_{SS}	Earth electrical potential	GND 0V
2	V_{DD}	Power for logic circuit	Apply + 5V
3	V_O	Contrast adjusting power	Adjust the contrast by applying 0 – 5V
4	RS	Register select	Various control signal inputs
5	R/W	Lead light	
6	E	Enable	
7	DB_0	Data input/output LSB	Data bus line • DB_7 is combination use for busy flag output • DB_{0-3} are not used when connecting with 4 bit parallel output micro – computer.
8	DB_1	Data input/output 2 bit	
9	DB_2	Data input/output 3 bit	
10	DB_3	Data input/output 4 bit	
11	DB_4	Data input/output 5 bit	
12	DB_5	Data input/output 6 bit	
13	DB_6	Data input/output 7 bit	
14	DB_7	Data input/output MSB	
15	V_{LED}	LED back light power (+)	Apply 5V voltage for LED back light to the interval between both terminals
16	V_{LSS}	LED back light power (–)	

SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

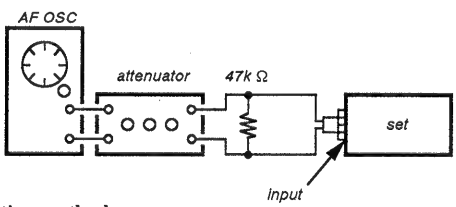
3-1. REMOVAL OF CASE



SECTION 4
ADJUSTMENT

LED Level Adjustment

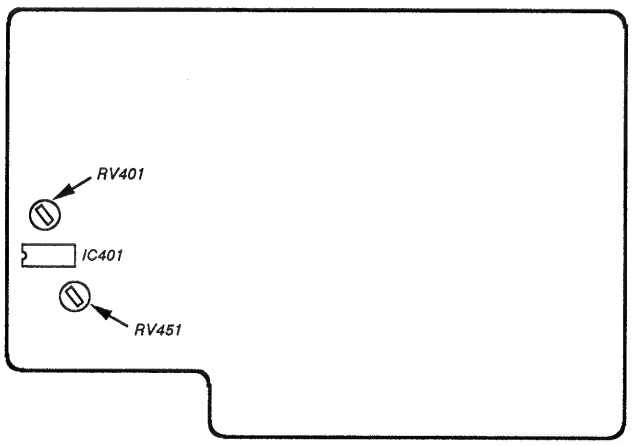
Setting:



Adjusting method:

1. INPUT Volume:MAX
2. Input − 30dBs, 1kHz signal to UN BALANCE input.
3. Adjust RV401 (CH-1) and RV451 (CH-2) so that the LED display of the level meter lights until 0dB.

Adjusting points :MAIN Board

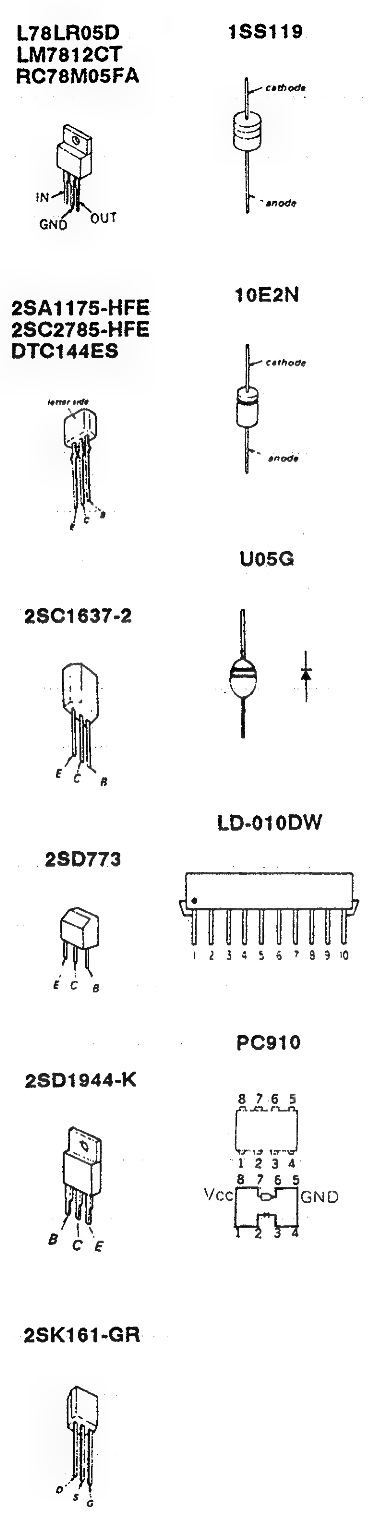


(Conductor side)

MEMO

SECTION 5
DIAGRAMS

•Semiconductor Lead Layouts.



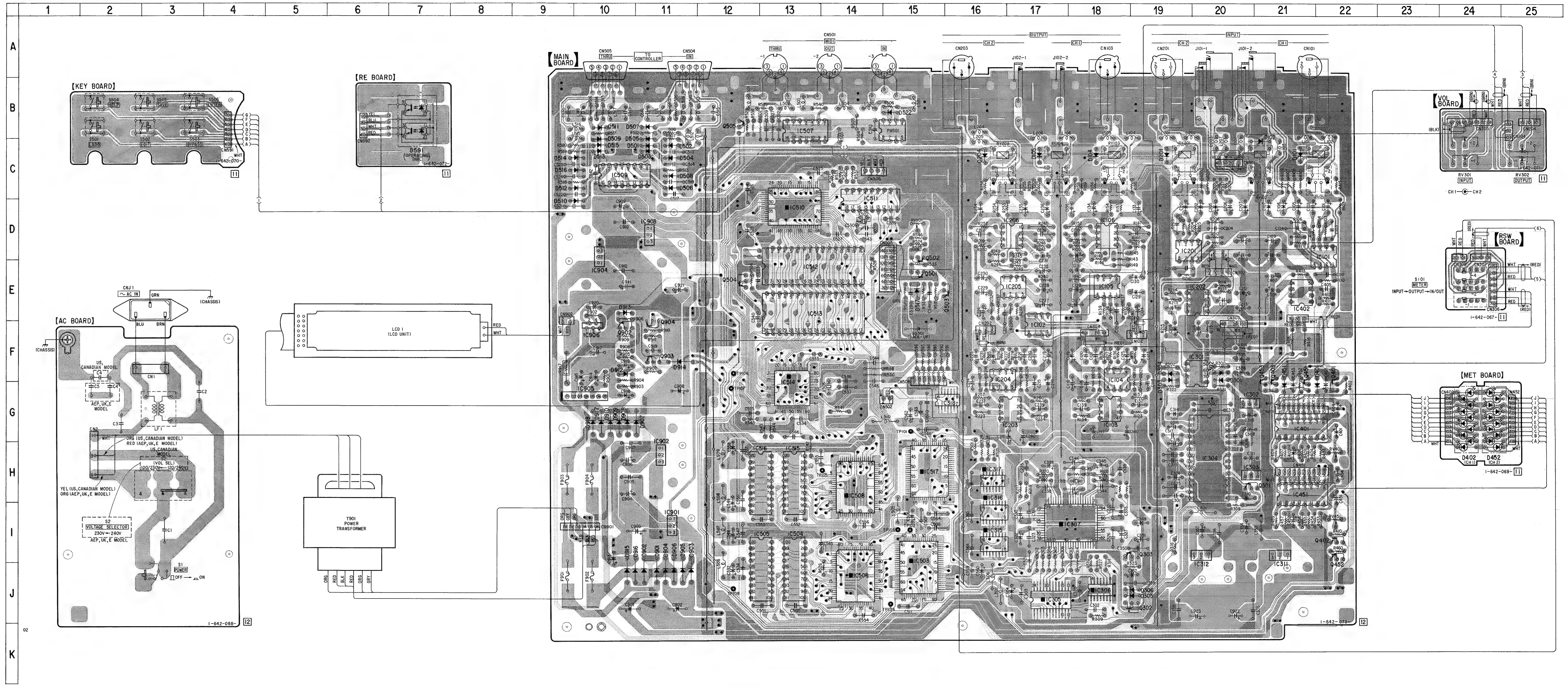
• SEMICONDUCTOR LOCATION

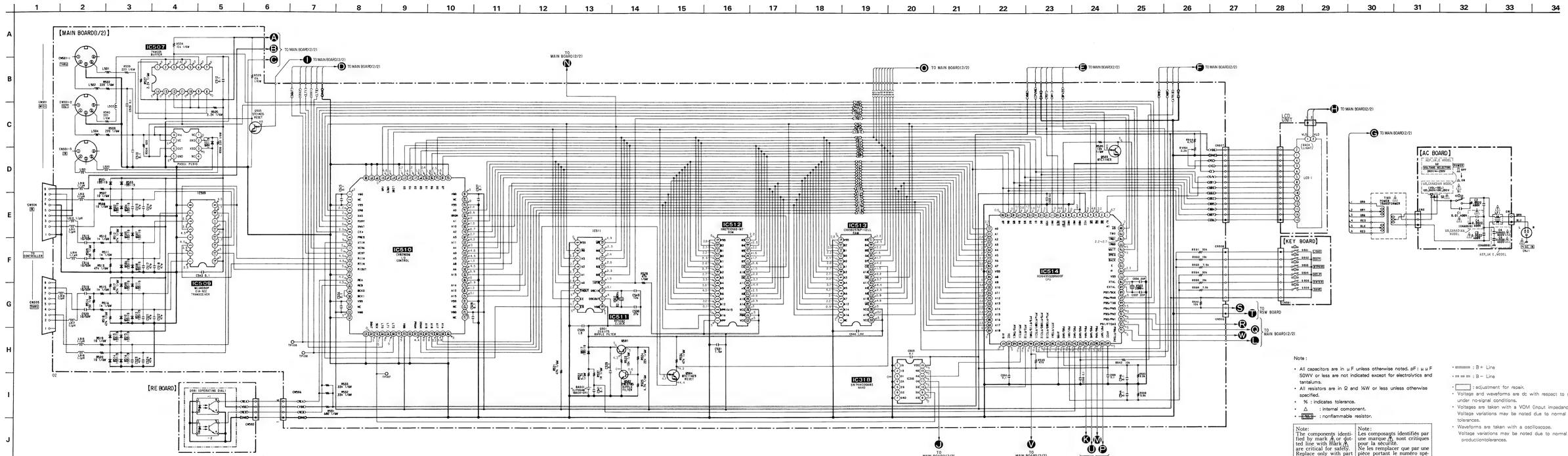
Ref. No.	Location	Ref. No.	Location
IC101	D-22	Q502	D-15
IC102	F-17	Q503	E-16
IC103	G-18	Q504	E-12
IC104	F-18	Q505	B-12
IC105	E-18	Q902	F-10
IC106	D-18	Q903	F-11
IC201	D-19	Q904	F-11
IC202	E-20	D101	C-21
IC203	G-17	D102	C-21
IC204	F-16	D104	C-18
IC205	E-17	D105	C-17
IC206	D-17	D201	C-19
IC301	F-20	D204	C-16
IC302	G-20	D301	F-20
IC303	H-20	D302	F-20
IC304	H-20	D303	F-19
IC305	J-17	D304	F-19
IC306	J-18	D305	J-19
IC307	I-18	D306	J-19
IC311	I-21	D401	G-22
IC312	I-20	D402	G-24
IC315	I-16	D451	G-21
IC316	I-16	D452	G-24
IC317	H-16	D501	C-11
IC318	G-16	D502	C-11
IC401	G-21	D503	C-11
IC402	E-21	D504	C-11
IC451	H-21	D505	B-11
IC503	I-15	D506	C-11
IC504	I-13	D507	B-11
IC505	I-13	D508	C-11
IC506	J-14	D509	B-10
IC507	B-13	D510	D-10
IC508	H-14	D511	B-10
IC509	C-10	D512	C-10
IC510	D-13	D513	C-10
IC511	C-14	D514	C-10
IC512	E-13	D515	C-10
IC513	E-13	D516	C-10
IC514	G-13	D517	E-15
IC515	H-13	D522	B-15
IC516	H-13	D591	B-7
IC517	H-15	D901	J-11
IC901	I-11	D902	J-11
IC902	H-11	D903	J-11
IC903	D11	D904	J-11
IC904	D-10	D905	J-11
IC905	G-10	D906	J-11
IC906	F-10	D907	G-11
		D908	G-10
PH501	B-15	D909	G-10
		D910	G-10
		D912	F-10
Q301	H-20	D913	E-10
Q302	J-19	D914	F-11
Q303	I-19		
Q401	G-22	D915	J-10
Q402	I-22	D916	J-10
		D917	G-10
Q403	G-21	D918	G-10
Q451	G-21		
Q452	I-22		
Q453	G-21		
Q501	E-15		

Note :

- ○— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ░ : Pattern on the side which is seen.
- ░ : Pattern of the rear side.

5-1. PRINTED WIRING BOARDS





Note :

- All capacitors are in μF unless otherwise noted. pF : μμF
  50WV or less are not indicated except for electrolytics and tantaums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- ▲ : nonflammable resistor.

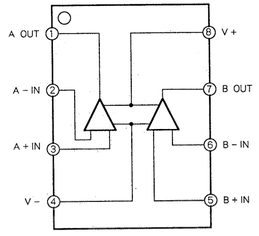
Note:	Note:
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▭▭▭ : B+ Line
- ▭▭▭ : B− Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal productiontolerances.

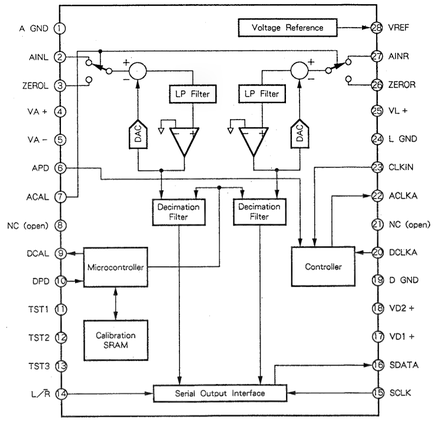
5-3. SCHEMATIC DIAGRAM (2)

•See page 21 for note. •See page 27 for IC Block Diagrams

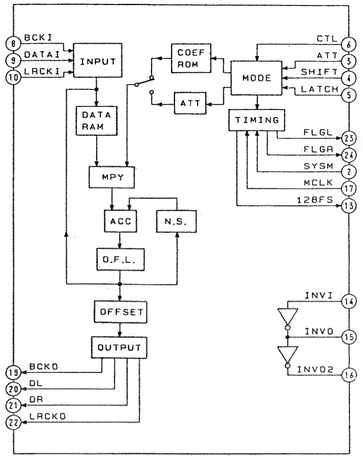
IC101, 103~106, 203~206 NJM5532D-D



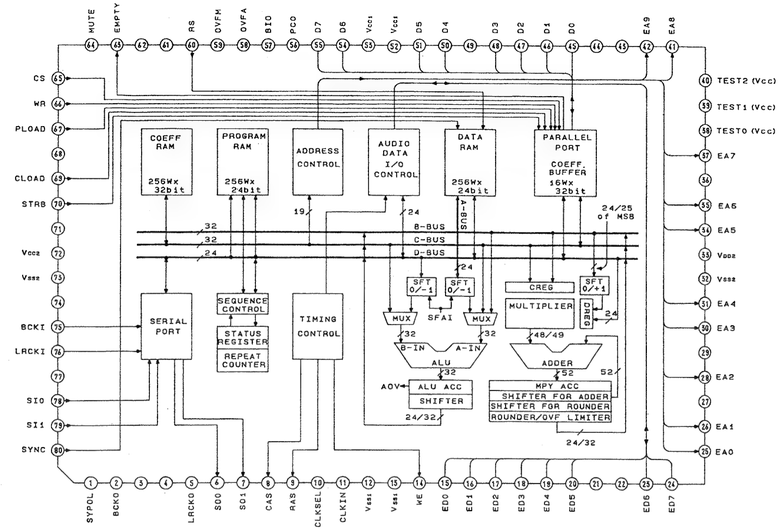
IC304 AK5328



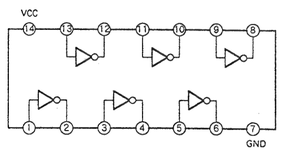
IC305 CXD2560M



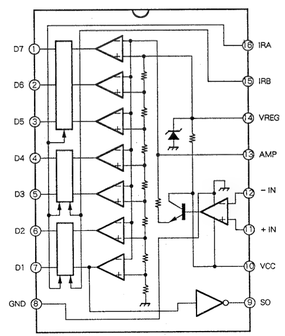
IC306~308 TMS57002PH



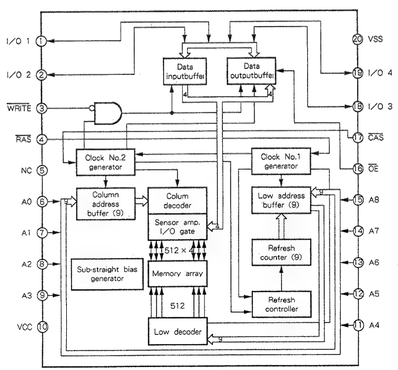
IC507 74HC05



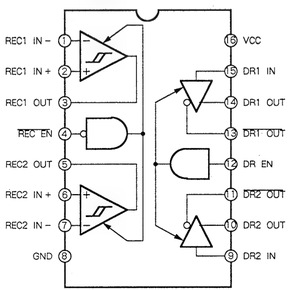
IC401, 451 IR2E02



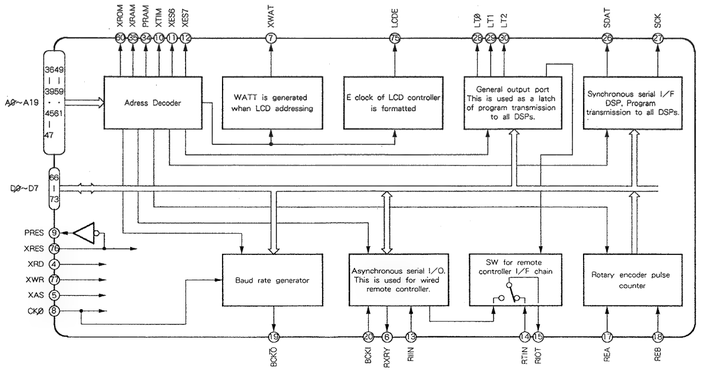
IC504, 505, 515, 516 TC514256AP-70



IC509 MC34050P



IC510 CXD2903Q



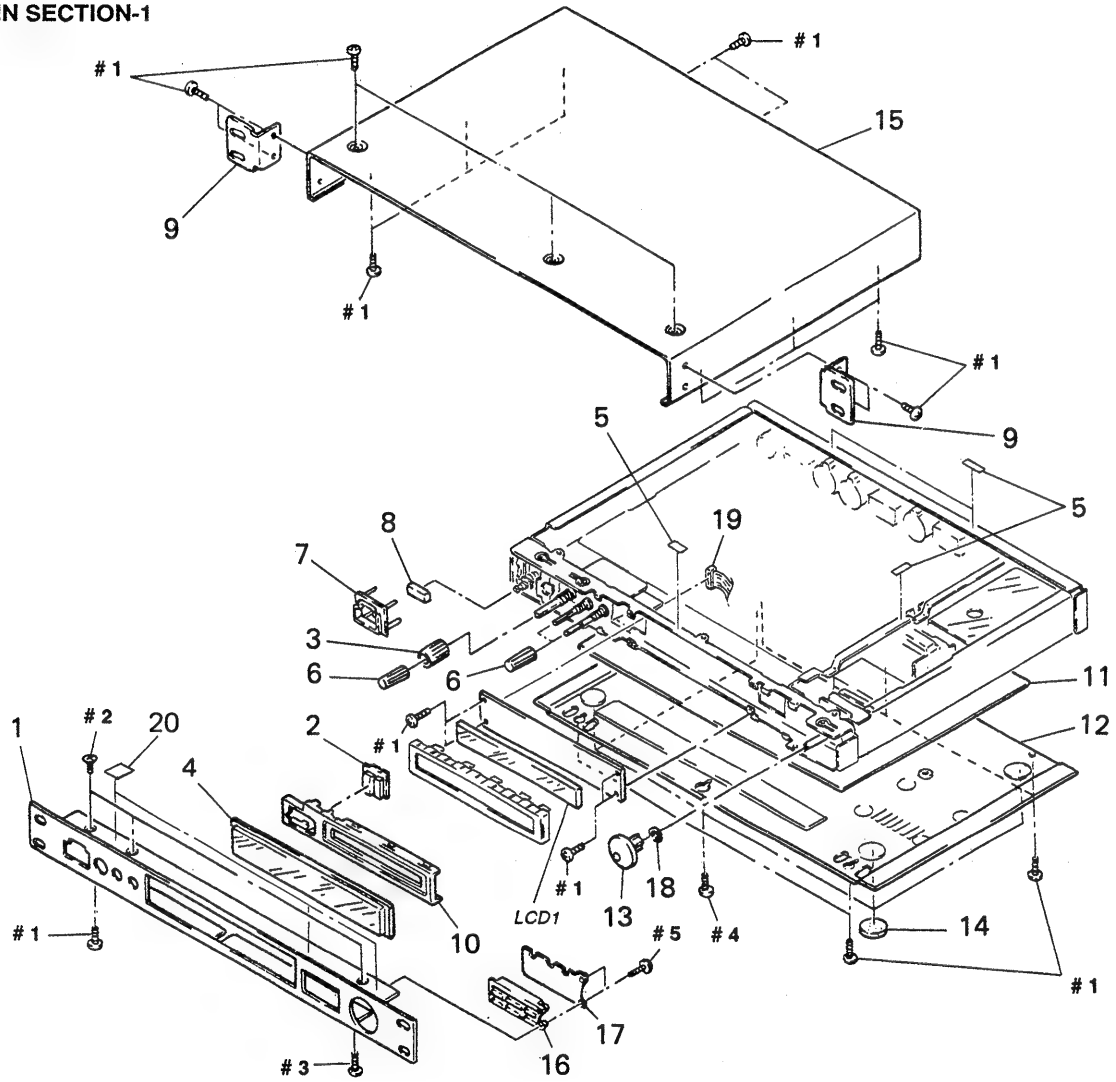
SECTION 6
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE).... (RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

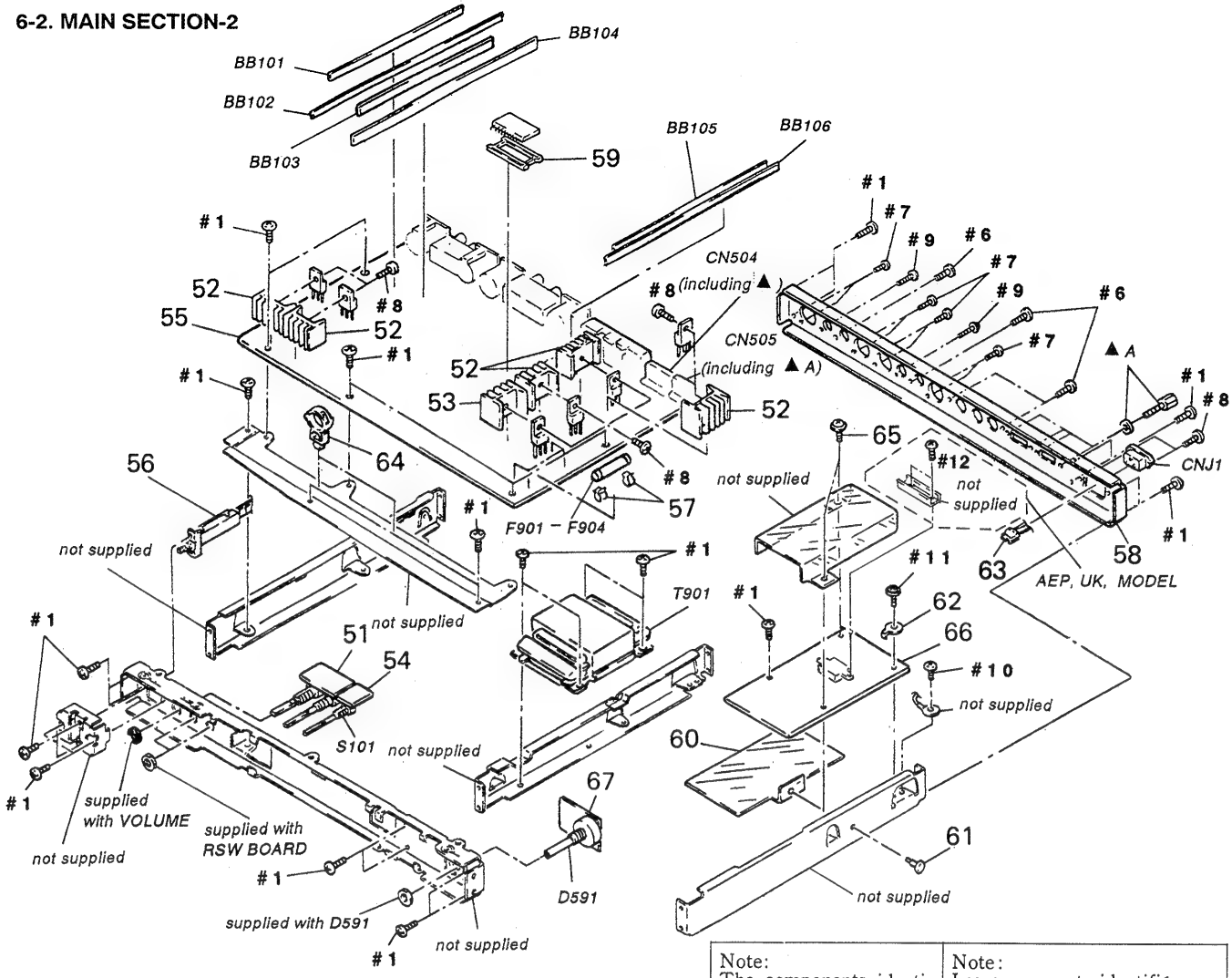
6-1. MAIN SECTION-1



Ref.No.	Part No.	Description	Remark
1	4-941-151-21	PANEL	
* 2	1-642-069-11	MET BOARD	
3	4-941-136-01	KNOB (B)	
4	4-941-144-21	PLATE, INDICATION	
5	3-831-441-XX	SPACER	
6	4-941-142-01	KNOB (A)	
7	4-941-139-01	ESCUTCHEON (A)	
8	4-922-921-21	BUTTON (POWER)	
* 9	4-916-305-01	REINFORCEMENT	
10	4-941-150-01	ESCUTCHEON (B)	
* 11	4-916-327-01	SHEET, INSULATING	
* 12	4-916-320-11	PLATE, BOTTOM	

Ref.No.	Part No.	Description	Remark
13	4-941-138-01	KNOB (RE)	
* 14	4-907-980-01	FOOT	
15	4-916-342-11	CASE(US,CND)	
15	4-916-342-21	CASE(EK)	
16	X-4941-028-2	BUTTON ASSY	
* 17	1-642-070-11	KEY BOARD	
18	4-941-141-01	STOPPER (RE)	
* 19	1-575-940-11	LEAD (WITH CONNECTOR)	
20	9-911-837-XX	CUSHION(A), FILTER	
LCD1	1-809-076-11	DISPLAY PANEL, LIQUID CRYSTAL	

6-2. MAIN SECTION-2



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description	Remark
* 51	1-642-071-11	VOL BOARD	
* 52	4-921-402-21	HEAT SINK	
* 53	4-363-146-00	HEAT SINK, V.OUT	
* 54	1-642-067-11	RSW BOARD	
* 55	A-4345-949-A	MAIN BOARD, COMPLETE	
⚠56	1-572-490-21	SWITCH, PUSH (AC POWER)(US,CND)	
⚠56	1-572-530-11	SWITCH, PUSH (AC POWER)(1KEY)(AEP,UK)	
* 57	1-533-213-31	HOLDER, FUSE	
* 58	4-941-146-01	PANEL, BACK	
59	1-540-107-11	SOCKET, IC 32P	
* 60	4-916-303-01	SHEET, INSULATING	
* 61	3-531-576-51	RIVET	
62	4-870-539-00	PLATE, GROUND	
* 63	1-690-057-11	LEAD (WITH CONNECTOR) (2 CORE)	
* 64	3-697-708-01	CLAMP (B), HARNESS	
65	4-886-821-01	SCREW, S TIGHT, +PTTWH 3X6	
* 66	1-642-068-11	AC BOARD	
* 67	1-642-072-11	RE BOARD	

Ref.No.	Part No.	Description	Remark
* BB101	1-560-242-21	BUS BAR 4P	
* BB102	1-560-242-91	BUS BAR 10P	
* BB103	1-560-242-71	BUS BAR 6P	
* BB104	1-560-242-91	BUS BAR 10P	
* BB105	1-560-242-91	BUS BAR 10P	
* BB106	1-560-242-41	BUS BAR 11P	
* CNJ1	1-580-375-21	INLET 3P	
CN504	1-568-200-21	SOCKET, CONNECTOR 9P	
CN505	1-568-200-21	SOCKET, CONNECTOR 9P	
D591	1-466-386-11	ENCODER, ROTARY	
⚠F901	1-532-215-00	FUSE, TIME-LAG(AEP,UK)	
⚠F901	1-532-739-11	FUSE, GLASS TUBE(US,CND)	
⚠F902	1-532-215-00	FUSE, TIME-LAG(AEP,UK)	
⚠F902	1-532-739-11	FUSE, GLASS TUBE(US,CND)	
⚠F903	1-532-215-00	FUSE, TIME-LAG(AEP,UK)	
⚠F903	1-532-739-11	FUSE, GLASS TUBE(US,CND)	
⚠F904	1-532-215-00	FUSE, TIME-LAG(AEP,UK)	
⚠F904	1-532-739-11	FUSE, GLASS TUBE(US,CND)	
S101	1-692-020-11	SWITCH, ROTARY	
⚠T901	1-450-176-11	TRANSFORMER, POWER(US,CND)	
⚠T901	1-450-690-11	TRANSFORMER, POWER(AEP,UK)	

SECTION 7
ELECTRICAL PARTS LIST

AC **KEY** **MAIN**

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA....: μA...., uPA....: μPA....
  uPB....: μPB...., uPC....: μPC....
  uPD....: μPD....
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description			Remark
*	1-642-068-11	AC BOARD			
		********			
	4-870-539-00	PLATE, GROUND			
	7-685-133-19	SCREW +P 2.6X6 TYPE2 NON-SLIT(AEP,UK)			
		< CAPACITOR >			
C1	1-161-744-00	CERAMIC	0.01uF		400V
C2	1-161-742-00	CERAMIC	0.0022uF	20%	400V
C3	1-161-742-00	CERAMIC	0.0022uF	20%	400V
C4	1-161-742-00	CERAMIC	0.0022uF	20%	400V
C5	1-161-742-00	CERAMIC	0.0022uF	20%	400V (AEP,UK)
		< CONNECTOR >			
* CN1	1-580-629-11	PIN, CONNECTOR 2P			
* CN2	1-564-687-11	PIN, CONNECTOR 3P			
		< LINE FILTER >			
LF1	1-421-915-11	COIL, LINE FILTER			
		< SWITCH >			
⚠S1	1-572-418-11	SWITCH, PUSH (AC POWER)(US,CND)			
⚠S1	1-572-530-11	SWITCH, PUSH (AC POWER) (1KEY)(AEP,UK)			
S2	1-570-173-11	SWITCH, VOLTAGE CHANGE			
**********					
*	1-642-070-11	KEY BOARD			
		*********			
		< SWITCH >			
S501	1-572-198-11	SWITCH, KEY BOARD(LOAD)			
S502	1-572-198-11	SWITCH, KEY BOARD(EDIT)			
S503	1-572-198-11	SWITCH, KEY BOARD(BYPASS)			
S504	1-572-198-11	SWITCH, KEY BOARD(HELP)			
S505	1-572-198-11	SWITCH, KEY BOARD(SAVE)			
S506	1-572-198-11	SWITCH, KEY BOARD(ENTER)			
**********					

Ref.No.	Part No.	Description			Remark
*	A-4345-949-A	MAIN BOARD, COMPLETE			
		**********			
*	1-533-213-31	HOLDER, FUSE			
	1-540-107-11	SOCKET, IC 32P			
*	4-363-146-00	HEAT SINK, V.OUT			
*	4-921-402-21	HEAT SINK			
	7-682-548-09	SCREW +BVTT 3X8 (S)			
		< BATTERY >			
BA501	1-528-225-11	BATTERY, LITHIUM			
		< BUS BAR >			
* BB101	1-560-242-21	BUS BAR 4P			
* BB102	1-560-242-91	BUS BAR 10P			
* BB103	1-560-242-71	BUS BAR 6P			
* BB104	1-560-242-91	BUS BAR 10P			
* BB105	1-560-242-91	BUS BAR 10P			
* BB106	1-560-242-41	BUS BAR 11P			
		< CAPACITOR >			
C101	1-126-233-11	ELECT	22uF	20%	50V
C102	1-126-233-11	ELECT	22uF	20%	50V
C103	1-162-282-31	CERAMIC	100PF	10%	50V
C104	1-162-282-31	CERAMIC	100PF	10%	50V
C105	1-126-233-11	ELECT	22uF	20%	50V
C106	1-126-233-11	ELECT	22uF	20%	50V
C107	1-126-233-11	ELECT	22uF	20%	50V
C108	1-124-477-11	ELECT	47uF	20%	25V
C109	1-124-477-11	ELECT	47uF	20%	25V
C110	1-162-207-31	CERAMIC	22PF	5%	50V
C111	1-126-233-11	ELECT	22uF	20%	50V
C114	1-110-335-11	MYLAR	100PF	5%	50V
C115	1-110-335-11	MYLAR	100PF	5%	50V
C116	1-126-233-11	ELECT	22uF	20%	50V
C117	1-162-207-31	CERAMIC	22PF	5%	50V
C118	1-124-477-11	ELECT	47uF	20%	25V
C119	1-124-477-11	ELECT	47uF	20%	25V
C120	1-130-479-00	MYLAR	0.0047uF	5%	50V
C121	1-130-472-00	MYLAR	0.0012uF	5%	50V
C123	1-126-233-11	ELECT	22uF	20%	50V

MAIN

Ref.No.	Part No.	Description			Remark
C124	1-126-233-11	ELECT	22uF	20%	50V
C125	1-126-233-11	ELECT	22uF	20%	50V
C126	1-162-215-31	CERAMIC	47PF	5%	50V
C127	1-124-477-11	ELECT	47uF	20%	25V
C128	1-124-477-11	ELECT	47uF	20%	25V
C129	1-126-233-11	ELECT	22uF	20%	50V
C130	1-126-233-11	ELECT	22uF	20%	50V
C131	1-124-477-11	ELECT	47uF	20%	25V
C132	1-124-477-11	ELECT	47uF	20%	25V
C133	1-126-025-11	ELECT	330uF	20%	25V
C134	1-126-025-11	ELECT	330uF	20%	25V
C135	1-130-467-00	MYLAR	470PF	5%	50V
C136	1-126-233-11	ELECT	22uF	20%	50V
C137	1-110-339-11	MYLAR	220PF	5%	50V
C138	1-162-207-31	CERAMIC	22PF	5%	50V
C139	1-110-339-11	MYLAR	220PF	5%	50V
C140	1-124-477-11	ELECT	47uF	20%	25V
C141	1-124-477-11	ELECT	47uF	20%	25V
C201	1-126-233-11	ELECT	22uF	20%	50V
C202	1-126-233-11	ELECT	22uF	20%	50V
C203	1-162-282-31	CERAMIC	100PF	10%	50V
C204	1-162-282-31	CERAMIC	100PF	10%	50V
C205	1-126-233-11	ELECT	22uF	20%	50V
C206	1-126-233-11	ELECT	22uF	20%	50V
C207	1-126-233-11	ELECT	22uF	20%	50V
C208	1-124-477-11	ELECT	47uF	20%	25V
C209	1-124-477-11	ELECT	47uF	20%	25V
C210	1-162-207-31	CERAMIC	22PF	5%	50V
C211	1-126-233-11	ELECT	22uF	20%	50V
C212	1-124-477-11	ELECT	47uF	20%	25V
C213	1-124-477-11	ELECT	47uF	20%	25V
C214	1-110-335-11	MYLAR	100PF	5%	50V
C215	1-110-335-11	MYLAR	100PF	5%	50V
C216	1-126-233-11	ELECT	22uF	20%	50V
C217	1-162-207-31	CERAMIC	22PF	5%	50V
C218	1-124-477-11	ELECT	47uF	20%	25V
C219	1-124-477-11	ELECT	47uF	20%	25V
C220	1-130-479-00	MYLAR	0.0047uF	5%	50V
C221	1-130-472-00	MYLAR	0.0012uF	5%	50V
C223	1-126-233-11	ELECT	22uF	20%	50V
C224	1-126-233-11	ELECT	22uF	20%	50V
C225	1-126-233-11	ELECT	22uF	20%	50V
C226	1-162-215-31	CERAMIC	47PF	5%	50V
C227	1-124-477-11	ELECT	47uF	20%	25V
C228	1-124-477-11	ELECT	47uF	20%	25V
C229	1-126-233-11	ELECT	22uF	20%	50V
C230	1-126-233-11	ELECT	22uF	20%	50V
C231	1-124-477-11	ELECT	47uF	20%	25V
C232	1-124-477-11	ELECT	47uF	20%	25V

Ref.No.	Part No.	Description			Remark
C233	1-126-025-11	ELECT	330uF	20%	25V
C234	1-126-025-11	ELECT	330uF	20%	25V
C235	1-130-467-00	MYLAR	470PF	5%	50V
C236	1-126-233-11	ELECT	22uF	20%	50V
C237	1-110-339-11	MYLAR	220PF	5%	50V
C238	1-162-207-31	CERAMIC	22PF	5%	50V
C239	1-110-339-11	MYLAR	220PF	5%	50V
C240	1-124-477-11	ELECT	47uF	20%	25V
C241	1-124-477-11	ELECT	47uF	20%	25V
C301	1-162-211-31	CERAMIC	33PF	5%	50V
C302	1-162-294-31	CERAMIC	0.001uF	10%	50V
C303	1-164-159-11	CERAMIC	0.1uF		50V
C304	1-124-443-00	ELECT	100uF	20%	10V
C305	1-124-477-11	ELECT	47uF	20%	25V
C306	1-124-477-11	ELECT	47uF	20%	25V
C307	1-162-211-31	CERAMIC	33PF	5%	50V
C308	1-126-176-11	ELECT	220uF	20%	10V
C309	1-164-159-11	CERAMIC	0.1uF		50V
C310	1-162-199-31	CERAMIC	10PF	5%	50V
C311	1-126-176-11	ELECT	220uF	20%	10V
C312	1-164-159-11	CERAMIC	0.1uF		50V
C313	1-164-159-11	CERAMIC	0.1uF		50V
C314	1-124-443-00	ELECT	100uF	20%	10V
C315	1-136-153-00	FILM	0.01uF	5%	50V
C316	1-124-443-00	ELECT	100uF	20%	10V
C317	1-164-159-11	CERAMIC	0.1uF		50V
C318	1-136-153-00	FILM	0.01uF	5%	50V
C319	1-162-211-31	CERAMIC	33PF	5%	50V
C320	1-164-159-11	CERAMIC	0.1uF		50V
C321	1-162-294-31	CERAMIC	0.001uF	10%	50V
C322	1-124-443-00	ELECT	100uF	20%	10V
C323	1-164-159-11	CERAMIC	0.1uF		50V
C324	1-124-443-00	ELECT	100uF	20%	10V
C325	1-164-159-11	CERAMIC	0.1uF		50V
C326	1-164-159-11	CERAMIC	0.1uF		50V
C327	1-124-443-00	ELECT	100uF	20%	10V
C330	1-124-443-00	ELECT	100uF	20%	10V
C331	1-164-159-11	CERAMIC	0.1uF		50V
C332	1-164-159-11	CERAMIC	0.1uF		50V
C333	1-124-443-00	ELECT	100uF	20%	10V
C338	1-164-159-11	CERAMIC	0.1uF		50V
C339	1-124-443-00	ELECT	100uF	20%	10V
C340	1-164-159-11	CERAMIC	0.1uF		50V
C344	1-164-159-11	CERAMIC	0.1uF		50V
C345	1-124-443-00	ELECT	100uF	20%	10V
C346	1-162-199-31	CERAMIC	10PF	5%	50V
C347	1-162-199-31	CERAMIC	10PF	5%	50V
C349	1-126-176-11	ELECT	220uF	20%	10V
C350	1-164-159-11	CERAMIC	0.1uF		50V

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Ref.No.	Part No.	Description			Remark
C351	1-124-477-11	ELECT	47uF	20%	25V
C352	1-124-477-11	ELECT	47uF	20%	25V
C353	1-164-159-11	CERAMIC	0.1uF		50V
C354	1-126-104-11	ELECT	470uF	20%	35V
C355	1-164-159-11	CERAMIC	0.1uF		50V
C356	1-164-159-11	CERAMIC	0.1uF		50V
C357	1-126-104-11	ELECT	470uF	20%	35V
C358	1-164-159-11	CERAMIC	0.1uF		50V
C359	1-164-159-11	CERAMIC	0.1uF		50V
C364	1-164-159-11	CERAMIC	0.1uF		50V
C365	1-164-159-11	CERAMIC	0.1uF		50V
C366	1-164-159-11	CERAMIC	0.1uF		50V
C401	1-124-477-11	ELECT	47uF	20%	25V
C402	1-124-482-11	ELECT	33uF	20%	35V
C403	1-124-907-11	ELECT	10uF	20%	50V
C404	1-124-477-11	ELECT	47uF	20%	25V
C405	1-124-477-11	ELECT	47uF	20%	25V
C406	1-124-477-11	ELECT	47uF	20%	25V
C407	1-124-477-11	ELECT	47uF	20%	25V
C451	1-124-477-11	ELECT	47uF	20%	25V
C452	1-124-482-11	ELECT	33uF	20%	35V
C453	1-124-907-11	ELECT	10uF	20%	50V
C454	1-124-477-11	ELECT	47uF	20%	25V
C505	1-164-159-11	CERAMIC	0.1uF		50V
C506	1-124-443-00	ELECT	100uF	20%	10V
C507	1-164-159-11	CERAMIC	0.1uF		50V
C508	1-164-159-11	CERAMIC	0.1uF		50V
C509	1-164-159-11	CERAMIC	0.1uF		50V
C510	1-164-159-11	CERAMIC	0.1uF		50V
C511	1-164-159-11	CERAMIC	0.1uF		50V
C512	1-164-159-11	CERAMIC	0.1uF		50V
C513	1-162-215-31	CERAMIC	47PF	5%	50V
C514	1-162-215-31	CERAMIC	47PF	5%	50V
C515	1-124-657-00	ELECT	10uF	20%	50V
C516	1-124-657-00	ELECT	10uF	20%	50V
C517	1-162-215-31	CERAMIC	47PF	5%	50V
C518	1-162-215-31	CERAMIC	47PF	5%	50V
C519	1-124-657-00	ELECT	10uF	20%	50V
C520	1-124-657-00	ELECT	10uF	20%	50V
C521	1-162-215-31	CERAMIC	47PF	5%	50V
C522	1-162-215-31	CERAMIC	47PF	5%	50V
C523	1-162-215-31	CERAMIC	47PF	5%	50V
C524	1-162-215-31	CERAMIC	47PF	5%	50V
C525	1-164-159-11	CERAMIC	0.1uF		50V
C526	1-164-159-11	CERAMIC	0.1uF		50V
C527	1-164-159-11	CERAMIC	0.1uF		50V
C528	1-164-159-11	CERAMIC	0.1uF		50V
C529	1-164-159-11	CERAMIC	0.1uF		50V
C530	1-162-209-31	CERAMIC	27PF	5%	50V

Ref.No.	Part No.	Description			Remark
C531	1-162-176-00	CERAMIC	1.5uF		25V
C532	1-124-443-00	ELECT	100uF	20%	10V
C533	1-164-159-11	CERAMIC	0.1uF		50V
C534	1-164-159-11	CERAMIC	0.1uF		50V
C535	1-164-159-11	CERAMIC	0.1uF		50V
C536	1-162-206-31	CERAMIC	20PF	5%	50V
C537	1-162-206-31	CERAMIC	20PF	5%	50V
C538	1-164-159-11	CERAMIC	0.1uF		50V
C539	1-162-176-00	CERAMIC	1.5uF		25V
C540	1-162-176-00	CERAMIC	1.5uF		25V
C541	1-164-159-11	CERAMIC	0.1uF		50V
C542	1-164-159-11	CERAMIC	0.1uF		50V
C543	1-162-201-31	CERAMIC	12PF	5%	50V
C544	1-164-159-11	CERAMIC	0.1uF		50V
C545	1-164-159-11	CERAMIC	0.1uF		50V
C546	1-164-159-11	CERAMIC	0.1uF		50V
C547	1-164-159-11	CERAMIC	0.1uF		50V
C548	1-124-443-00	ELECT	100uF	20%	10V
C549	1-124-443-00	ELECT	100uF	20%	10V
C550	1-164-159-11	CERAMIC	0.1uF		50V
C551	1-164-159-11	CERAMIC	0.1uF		50V
C552	1-164-159-11	CERAMIC	0.1uF		50V
C553	1-164-159-11	CERAMIC	0.1uF		50V
C554	1-164-159-11	CERAMIC	0.1uF		50V
C555	1-164-159-11	CERAMIC	0.1uF		50V
C556	1-164-159-11	CERAMIC	0.1uF		50V
C557	1-164-159-11	CERAMIC	0.1uF		50V
C558	1-124-443-00	ELECT	100uF	20%	10V
C559	1-164-159-11	CERAMIC	0.1uF		50V
C560	1-124-443-00	ELECT	100uF	20%	10V
C561	1-164-159-11	CERAMIC	0.1uF		50V
C562	1-124-443-00	ELECT	100uF	20%	10V
C563	1-164-159-11	CERAMIC	0.1uF		50V
C564	1-164-159-11	CERAMIC	0.1uF		50V
C565	1-164-159-11	CERAMIC	0.1uF		50V
C566	1-164-159-11	CERAMIC	0.1uF		50V
C901	1-128-136-11	ELECT	2200uF	20%	35V
C902	1-128-136-11	ELECT	2200uF	20%	35V
C903	1-128-136-11	ELECT	2200uF	20%	35V
C904	1-124-479-11	ELECT	330uF	20%	25V
C905	1-164-159-11	CERAMIC	0.1uF		50V
C906	1-124-479-11	ELECT	330uF	20%	25V
C907	1-164-159-11	CERAMIC	0.1uF		50V
C908	1-126-017-11	ELECT	6800uF	20%	16V
C909	1-124-473-11	ELECT	1000uF	20%	10V
C910	1-164-159-11	CERAMIC	0.1uF		50V
C911	1-124-473-11	ELECT	1000uF	20%	10V
C912	1-164-159-11	CERAMIC	0.1uF		50V
C913	1-126-233-11	ELECT	22uF	20%	50V

Ref.No.	Part No.	Description			Remark
C914	1-124-903-11	ELECT	1uF	20% 50V	
C915	1-124-907-11	ELECT	10uF	20% 50V	
C916	1-124-482-11	ELECT	33uF	20% 35V	
C917	1-124-556-11	ELECT	2200uF	20% 16V	
C918	1-124-477-11	ELECT	47uF	20% 25V	
C919	1-136-157-00	FILM	0.022uF	5% 50V	
C920	1-124-925-11	ELECT	2.2uF	20% 100V	
C921	1-124-473-11	ELECT	1000uF	20% 10V	
C922	1-126-105-11	ELECT	1000uF	20% 35V	
C923	1-126-105-11	ELECT	1000uF	20% 35V	
		< CONNECTOR >			
CN101	1-568-006-11	CONNECTOR, XLR TYPE 3P			
* CN102	1-564-506-11	PLUG, CONNECTOR 3P			
CN103	1-568-005-11	CONNECTOR, XLR TYPE 3P			
CN201	1-568-006-11	CONNECTOR, XLR TYPE 3P			
* CN202	1-564-506-11	PLUG, CONNECTOR 3P			
CN203	1-568-005-11	CONNECTOR, XLR TYPE 3P			
* CN301	1-560-062-00	PIN, CONNECTOR 4P			
* CN302	1-564-507-11	PLUG, CONNECTOR 4P			
CN303	1-564-507-11	PLUG, CONNECTOR 4P			
* CN304	1-564-507-11	PLUG, CONNECTOR 4P			
* CN401	1-564-666-11	PIN, CONNECTOR 10P			
* CN403	1-564-506-11	PLUG, CONNECTOR 3P			
* CN451	1-564-666-11	PIN, CONNECTOR 10P			
CN501	1-580-042-11	CONNECTOR, DIN			
* CN502	1-564-505-11	PLUG, CONNECTOR 2P			
CN504	1-568-200-21	SOCKET, CONNECTOR 9P			
CN505	1-568-200-21	SOCKET, CONNECTOR 9P			
* CN506	1-564-507-11	PLUG, CONNECTOR 4P			
* CN507	1-580-043-11	SOCKET, CONNECTOR			
* CN508	1-564-341-11	PIN, CONNECTOR 7P			
*.CN901	1-560-064-00	PIN, CONNECTOR 6P			
* CN902	1-564-505-11	PLUG, CONNECTOR 2P			
		< DIODE >			
D101	8-719-911-19	DIODE	1SS119		
D102	8-719-911-19	DIODE	1SS119		
D104	8-719-911-19	DIODE	1SS119		
D105	8-719-911-19	DIODE	1SS119		
D201	8-719-911-19	DIODE	1SS119		
D204	8-719-911-19	DIODE	1SS119		
D301	8-719-911-19	DIODE	1SS119		
D302	8-719-911-19	DIODE	1SS119		
D303	8-719-911-19	DIODE	1SS119		
D304	8-719-911-19	DIODE	1SS119		
D305	8-719-911-19	DIODE	1SS119		
D306	8-719-114-29	DIODE	RD5.1JS-B1		
D401	8-719-911-19	DIODE	1SS119		

Ref.No.	Part No.	Description		Remark
D451	8-719-911-19	DIODE	1SS119	
D501	8-719-911-19	DIODE	1SS119	
D502	8-719-911-19	DIODE	1SS119	
D503	8-719-911-19	DIODE	1SS119	
D504	8-719-911-19	DIODE	1SS119	
D505	8-719-911-19	DIODE	1SS119	
D506	8-719-911-19	DIODE	1SS119	
D507	8-719-911-19	DIODE	1SS119	
D508	8-719-911-19	DIODE	1SS119	
D509	8-719-911-19	DIODE	1SS119	
D510	8-719-911-19	DIODE	1SS119	
D511	8-719-911-19	DIODE	1SS119	
D512	8-719-911-19	DIODE	1SS119	
D513	8-719-911-19	DIODE	1SS119	
D514	8-719-911-19	DIODE	1SS119	
D515	8-719-911-19	DIODE	1SS119	
D516	8-719-911-19	DIODE	1SS119	
D517	8-719-911-19	DIODE	1SS119	
D522	8-719-911-19	DIODE	1SS119	
D901	8-719-911-55	DIODE	U05G	
D902	8-719-911-55	DIODE	U05G	
D903	8-719-911-55	DIODE	U05G	
D904	8-719-911-55	DIODE	U05G	
D905	8-719-911-55	DIODE	U05G	
D906	8-719-911-55	DIODE	U05G	
D907	8-719-911-55	DIODE	U05G	
D908	8-719-911-55	DIODE	U05G	
D909	8-719-200-77	DIODE	10E2N	
D910	8-719-200-77	DIODE	10E2N	
D912	8-719-911-19	DIODE	1SS119	
D913	8-719-911-19	DIODE	1SS119	
D914	8-719-911-19	DIODE	1SS119	
D915	8-719-200-77	DIODE	10E2N	
D916	8-719-200-77	DIODE	10E2N	
D917	8-719-200-77	DIODE	10E2N	
D918	8-719-200-77	DIODE	10E2N	
		< IC >		
IC101	8-759-982-03	IC	RC5532D-D	
IC102	8-759-945-58	IC	RC4558P	
IC103	8-759-982-03	IC	RC5532D-D	
IC104	8-759-982-03	IC	RC5532D-D	
IC105	8-759-982-03	IC	RC5532D-D	
IC106	8-759-982-03	IC	RC5532D-D	
IC201	8-759-982-03	IC	RC5532D-D	
IC202	8-759-945-58	IC	RC4558P	
IC203	8-759-982-03	IC	RC5532D-D	
IC204	8-759-982-03	IC	RC5532D-D	

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Ref.No.	Part No.	Description	Remark
IC205	8-759-982-03	IC RC5532D-D	
IC206	8-759-982-03	IC RC5532D-D	
IC301	8-759-982-03	IC RC5532D-D	
IC302	8-759-982-31	IC RC78M05FA	
IC303	8-759-982-52	IC RC79M05FA	
IC304	8-759-502-91	IC AK5328-VP	
IC305	8-752-342-65	IC CXD2560M	
IC306	8-759-925-74	IC SN74HC04ANS	
IC307	8-759-044-10	IC CXD2562Q	
IC311	8-759-982-36	IC RC78M15FA	
IC312	8-759-982-58	IC RC79M15FA	
IC315	8-759-926-21	IC SN74HC161ANS	
IC316	8-759-926-21	IC SN74HC161ANS	
IC317	8-759-925-90	IC SN74HC74ANS	
IC318	8-759-927-46	IC SN74HC00ANS	
IC401	8-759-912-79	IC IR2E02	
IC402	8-759-945-58	IC RC4558P	
IC451	8-759-912-79	IC IR2E02	
IC503	8-752-343-18	IC CXD2704Q	
IC504	8-759-243-04	IC TC514256AP-70	
IC505	8-759-243-04	IC TC514256AP-70	
IC506	8-759-513-21	IC TMS57002PH	
IC507	8-759-916-15	IC SN74HC05AN	
IC508	8-759-513-21	IC TMS57002PH	
IC509	8-759-011-90	IC MC34050P	
IC510	8-759-502-92	IC CXD2903Q	
IC511	8-759-984-34	IC RP5C62	
IC512	8-759-055-03	IC HN27C101AG-M7	
IC513	8-752-337-49	IC CXK58257AP-12LL	
IC514	8-759-323-88	IC HD6435328RA00F	
IC515	8-759-243-04	IC TC514256AP-70	
IC516	8-759-243-04	IC TC514256AP-70	
IC517	8-752-343-18	IC CXD2704Q	
IC901	8-759-929-62	IC LM7812CT	
IC902	8-759-982-36	IC RC78M15FA	
IC903	8-759-982-31	IC RC78M05FA	
IC904	8-759-982-31	IC RC78M05FA	
IC905	8-759-802-61	IC LA5666	
IC906	8-759-805-37	IC L78LR05D	
		< JACK >	
J101	1-580-041-11	JACK, LARGE (2 GANG)	
J102	1-563-363-11	JACK, LARGE TYPE 2P	
		< COIL >	
L101	1-410-397-21	FERRITE BEAD INDUCTOR	
L102	1-410-397-21	FERRITE BEAD INDUCTOR	
L103	1-410-397-21	FERRITE BEAD INDUCTOR	
L104	1-410-397-21	FERRITE BEAD INDUCTOR	
L105	1-410-397-21	FERRITE BEAD INDUCTOR	
L106	1-410-397-21	FERRITE BEAD INDUCTOR	
L107	1-410-397-21	FERRITE BEAD INDUCTOR	
L201	1-410-397-21	FERRITE BEAD INDUCTOR	
L202	1-410-397-21	FERRITE BEAD INDUCTOR	
L203	1-410-397-21	FERRITE BEAD INDUCTOR	
L204	1-410-397-21	FERRITE BEAD INDUCTOR	
L205	1-410-397-21	FERRITE BEAD INDUCTOR	
L206	1-410-397-21	FERRITE BEAD INDUCTOR	
L207	1-410-397-21	FERRITE BEAD INDUCTOR	
L301	1-410-324-11	INDUCTOR 4.7uH	
L302	1-410-324-11	INDUCTOR 4.7uH	
L306	1-410-324-11	INDUCTOR 4.7uH	
L501	1-424-090-11	COIL, LINE FILTER	
L502	1-424-090-11	COIL, LINE FILTER	
L503	1-424-090-11	COIL, LINE FILTER	
L504	1-424-090-11	COIL, LINE FILTER	
L505	1-410-324-11	INDUCTOR 4.7uH	
L506	1-410-324-11	INDUCTOR 4.7uH	
L507	1-410-324-11	INDUCTOR 4.7uH	
L508	1-410-324-11	INDUCTOR 4.7uH	
L509	1-410-324-11	INDUCTOR 4.7uH	
L510	1-410-324-11	INDUCTOR 4.7uH	
L511	1-410-397-21	FERRITE BEAD INDUCTOR	
L512	1-410-397-21	FERRITE BEAD INDUCTOR	
L513	1-410-397-21	FERRITE BEAD INDUCTOR	
L514	1-410-397-21	FERRITE BEAD INDUCTOR	
L515	1-410-397-21	FERRITE BEAD INDUCTOR	
L516	1-410-397-21	FERRITE BEAD INDUCTOR	
L517	1-410-397-21	FERRITE BEAD INDUCTOR	
L518	1-410-397-21	FERRITE BEAD INDUCTOR	
L519	1-410-397-21	FERRITE BEAD INDUCTOR	
L520	1-424-090-11	COIL, LINE FILTER	
L521	1-424-090-11	COIL, LINE FILTER	
		< PHOTO INTERUPTER >	
PH501	8-719-933-26	DIODE PC910	
		< TRANSISTOR >	
Q301	8-729-900-89	TRANSISTOR DTC144ES	
Q302	8-729-216-13	TRANSISTOR 2SK161-GR	
Q303	8-729-905-67	TRANSISTOR 2SD1944-K	
Q401	8-729-900-89	TRANSISTOR DTC144ES	
Q402	8-729-900-80	TRANSISTOR DTC114ES	
Q403	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q451	8-729-900-89	TRANSISTOR DTC144ES	
Q452	8-729-900-80	TRANSISTOR DTC114ES	
Q453	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q501	8-729-119-76	TRANSISTOR 2SA1175-HFE	

MAIN

Ref.No.	Part No.	Description		Remark
Q502	8-729-119-78	TRANSISTOR	2SC2785-HFE	
Q503	8-729-900-80	TRANSISTOR	DTC114ES	
Q504	8-729-900-80	TRANSISTOR	DTC114ES	
Q505	8-729-900-89	TRANSISTOR	DTC144ES	
Q902	8-729-119-78	TRANSISTOR	2SC2785-HFE	
Q903	8-729-900-80	TRANSISTOR	DTC114ES	
Q904	8-729-140-98	TRANSISTOR	2SD773	
		< RESISTOR >		
R101	1-259-476-11	CARBON	100K 5% 1/6W	
R102	1-259-476-11	CARBON	100K 5% 1/6W	
R103	1-259-447-11	CARBON	6.2K 5% 1/6W	
R104	1-259-452-11	CARBON	10K 5% 1/6W	
R105	1-259-452-11	CARBON	10K 5% 1/6W	
R106	1-259-447-11	CARBON	6.2K 5% 1/6W	
R107	1-259-476-11	CARBON	100K 5% 1/6W	
R108	1-259-476-11	CARBON	100K 5% 1/6W	
R109	1-259-476-11	CARBON	100K 5% 1/6W	
R110	1-259-460-11	CARBON	22K 5% 1/6W	
R111	1-259-452-11	CARBON	10K 5% 1/6W	
R112	1-259-476-11	CARBON	100K 5% 1/6W	
R113	1-259-476-11	CARBON	100K 5% 1/6W	
R114	1-259-476-11	CARBON	100K 5% 1/6W	
R115	1-259-452-11	CARBON	10K 5% 1/6W	
R116	1-215-437-00	METAL	4.7K 1% 1/6W	
R117	1-215-443-00	METAL	8.2K 1% 1/6W	
R118	1-215-437-00	METAL	4.7K 1% 1/6W	
R119	1-215-443-00	METAL	8.2K 1% 1/6W	
R120	1-215-443-00	METAL	8.2K 1% 1/6W	
R121	1-215-449-00	METAL	15K 1% 1/6W	
R122	1-215-443-00	METAL	8.2K 1% 1/6W	
R123	1-215-433-00	METAL	3.3K 1% 1/6W	
R124	1-215-449-00	METAL	15K 1% 1/6W	
R127	1-215-425-00	METAL	1.5K 1% 1/6W	
R128	1-215-425-00	METAL	1.5K 1% 1/6W	
R132	1-259-476-11	CARBON	100K 5% 1/6W	
R134	1-215-433-00	METAL	3.3K 1% 1/6W	
R135	1-259-476-11	CARBON	100K 5% 1/6W	
R136	1-259-468-11	CARBON	47K 5% 1/6W	
R137	1-259-452-11	CARBON	10K 5% 1/6W	
R138	1-259-447-11	CARBON	6.2K 5% 1/6W	
R139	1-259-476-11	CARBON	100K 5% 1/6W	
R140	1-259-476-11	CARBON	100K 5% 1/6W	
R142	1-215-445-00	METAL	10K 1% 1/6W	
R143	1-259-492-11	CARBON	470K 5% 1/6W	
R144	1-215-453-00	METAL	22K 1% 1/6W	
R145	1-215-445-00	METAL	10K 1% 1/6W	
R146	1-215-453-00	METAL	22K 1% 1/6W	
R147	1-249-901-11	CARBON	120 1% 1/4W	
R148	1-215-445-00	METAL	10K 1% 1/6W	
R149	1-215-453-00	METAL	22K 1% 1/6W	
R150	1-215-445-00	METAL	10K 1% 1/6W	
R151	1-215-453-00	METAL	22K 1% 1/6W	
R152	1-249-901-11	CARBON	120 1% 1/4W	
R153	1-215-445-00	METAL	10K 1% 1/6W	
R154	1-215-445-00	METAL	10K 1% 1/6W	
R155	1-259-476-11	CARBON	100K 5% 1/6W	
R156	1-259-476-11	CARBON	100K 5% 1/6W	
R157	1-215-445-00	METAL	10K 1% 1/6W	
R158	1-259-422-11	CARBON	560 5% 1/6W	
R159	1-259-476-11	CARBON	100K 5% 1/6W	
R160	1-215-445-00	METAL	10K 1% 1/6W	
R201	1-259-476-11	CARBON	100K 5% 1/6W	
R202	1-259-476-11	CARBON	100K 5% 1/6W	
R203	1-259-447-11	CARBON	6.2K 5% 1/6W	
R204	1-259-452-11	CARBON	10K 5% 1/6W	
R205	1-259-452-11	CARBON	10K 5% 1/6W	
R206	1-259-447-11	CARBON	6.2K 5% 1/6W	
R207	1-259-476-11	CARBON	100K 5% 1/6W	
R208	1-259-476-11	CARBON	100K 5% 1/6W	
R209	1-259-476-11	CARBON	100K 5% 1/6W	
R210	1-259-460-11	CARBON	22K 5% 1/6W	
R211	1-259-452-11	CARBON	10K 5% 1/6W	
R212	1-259-476-11	CARBON	100K 5% 1/6W	
R213	1-259-476-11	CARBON	100K 5% 1/6W	
R214	1-259-476-11	CARBON	100K 5% 1/6W	
R215	1-259-452-11	CARBON	10K 5% 1/6W	
R216	1-215-437-00	METAL	4.7K 1% 1/6W	
R217	1-215-443-00	METAL	8.2K 1% 1/6W	
R218	1-215-437-00	METAL	4.7K 1% 1/6W	
R219	1-215-443-00	METAL	8.2K 1% 1/6W	
R220	1-215-443-00	METAL	8.2K 1% 1/6W	
R221	1-215-449-00	METAL	15K 1% 1/6W	
R222	1-215-443-00	METAL	8.2K 1% 1/6W	
R223	1-215-433-00	METAL	3.3K 1% 1/6W	
R224	1-215-449-00	METAL	15K 1% 1/6W	
R227	1-215-425-00	METAL	1.5K 1% 1/6W	
R228	1-215-425-00	METAL	1.5K 1% 1/6W	
R232	1-259-476-11	CARBON	100K 5% 1/6W	
R234	1-215-433-00	METAL	3.3K 1% 1/6W	
R235	1-259-476-11	CARBON	100K 5% 1/6W	
R236	1-259-468-11	CARBON	47K 5% 1/6W	
R237	1-259-452-11	CARBON	10K 5% 1/6W	
R238	1-259-447-11	CARBON	6.2K 5% 1/6W	
R239	1-259-476-11	CARBON	100K 5% 1/6W	
R240	1-259-476-11	CARBON	100K 5% 1/6W	
R242	1-215-445-00	METAL	10K 1% 1/6W	
R243	1-259-492-11	CARBON	470K 5% 1/6W	

MAIN

Ref.No.	Part No.	Description			Remark
R244	1-215-453-00	METAL	22K	1%	1/6W
R245	1-215-445-00	METAL	10K	1%	1/6W
R246	1-215-453-00	METAL	22K	1%	1/6W
R247	1-249-901-11	CARBON	120	1%	1/4W
R248	1-215-445-00	METAL	10K	1%	1/6W
R249	1-215-453-00	METAL	22K	1%	1/6W
R250	1-215-445-00	METAL	10K	1%	1/6W
R251	1-215-453-00	METAL	22K	1%	1/6W
R252	1-249-901-11	CARBON	120	1%	1/4W
R253	1-215-445-00	METAL	10K	1%	1/6W
R254	1-215-445-00	METAL	10K	1%	1/6W
R255	1-259-476-11	CARBON	100K	5%	1/6W
R256	1-259-476-11	CARBON	100K	5%	1/6W
R257	1-215-445-00	METAL	10K	1%	1/6W
R258	1-259-422-11	CARBON	560	5%	1/6W
R259	1-259-476-11	CARBON	100K	5%	1/6W
R260	1-215-445-00	METAL	10K	1%	1/6W
R301	1-259-396-11	CARBON	47	5%	1/6W
R302	1-259-396-11	CARBON	47	5%	1/6W
R303	1-259-404-11	CARBON	100	5%	1/6W
R304	1-259-404-11	CARBON	100	5%	1/6W
R305	1-259-404-11	CARBON	100	5%	1/6W
R306	1-259-404-11	CARBON	100	5%	1/6W
R307	1-259-380-11	CARBON	10	5%	1/6W
R308	1-259-452-11	CARBON	10K	5%	1/6W
R309	1-259-428-11	CARBON	1K	5%	1/6W
R310	1-259-404-11	CARBON	100	5%	1/6W
R311	1-259-404-11	CARBON	100	5%	1/6W
R312	1-259-428-11	CARBON	1K	5%	1/6W
R313	1-259-404-11	CARBON	100	5%	1/6W
R314	1-259-404-11	CARBON	100	5%	1/6W
R315	1-259-445-11	CARBON	5.1K	5%	1/6W
R316	1-259-404-11	CARBON	100	5%	1/6W
R321	1-259-396-11	CARBON	47	5%	1/6W
R322	1-259-396-11	CARBON	47	5%	1/6W
R323	1-259-428-11	CARBON	1K	5%	1/6W
R324	1-259-404-11	CARBON	100	5%	1/6W
R325	1-259-404-11	CARBON	100	5%	1/6W
R326	1-259-404-11	CARBON	100	5%	1/6W
R327	1-259-404-11	CARBON	100	5%	1/6W
R402	1-259-424-11	CARBON	680	5%	1/6W
R403	1-259-452-11	CARBON	10K	5%	1/6W
R404	1-259-464-11	CARBON	33K	5%	1/6W
R405	1-259-454-11	CARBON	12K	5%	1/6W
R406	1-259-452-11	CARBON	10K	5%	1/6W
R407	1-259-440-11	CARBON	3.3K	5%	1/6W
R409	1-259-452-11	CARBON	10K	5%	1/6W
R410	1-259-424-11	CARBON	680	5%	1/6W
R411	1-215-430-00	METAL	2.4K	1%	1/6W

Ref.No.	Part No.	Description			Remark
R412	1-215-434-00	METAL	3.6K	1%	1/6W
R413	1-259-452-11	CARBON	10K	5%	1/6W
R414	1-259-452-11	CARBON	10K	5%	1/6W
R415	1-259-452-11	CARBON	10K	5%	1/6W
R416	1-259-420-11	CARBON	470	5%	1/6W
R452	1-259-424-11	CARBON	680	5%	1/6W
R453	1-259-452-11	CARBON	10K	5%	1/6W
R454	1-259-464-11	CARBON	33K	5%	1/6W
R455	1-259-454-11	CARBON	12K	5%	1/6W
R456	1-259-452-11	CARBON	10K	5%	1/6W
R457	1-259-440-11	CARBON	3.3K	5%	1/6W
R459	1-259-452-11	CARBON	10K	5%	1/6W
R460	1-259-424-11	CARBON	680	5%	1/6W
R466	1-259-420-11	CARBON	470	5%	1/6W
R501	1-259-404-11	CARBON	100	5%	1/6W
R502	1-259-412-11	CARBON	220	5%	1/6W
R503	1-259-412-11	CARBON	220	5%	1/6W
R504	1-259-426-11	CARBON	820	5%	1/6W
R505	1-259-436-11	CARBON	2.2K	5%	1/6W
R506	1-259-412-11	CARBON	220	5%	1/6W
R507	1-259-380-11	CARBON	10	5%	1/6W
R508	1-259-380-11	CARBON	10	5%	1/6W
R509	1-249-782-11	CARBON	150	5%	1/6W
R510	1-259-428-11	CARBON	1K	5%	1/6W
R511	1-259-428-11	CARBON	1K	5%	1/6W
R512	1-259-468-11	CARBON	47K	5%	1/6W
R513	1-259-468-11	CARBON	47K	5%	1/6W
R514	1-249-782-11	CARBON	150	5%	1/6W
R515	1-259-428-11	CARBON	1K	5%	1/6W
R516	1-259-428-11	CARBON	1K	5%	1/6W
R517	1-259-468-11	CARBON	47K	5%	1/6W
R518	1-259-468-11	CARBON	47K	5%	1/6W
R519	1-259-380-11	CARBON	10	5%	1/6W
R520	1-259-380-11	CARBON	10	5%	1/6W
R521	1-259-468-11	CARBON	47K	5%	1/6W
R522	1-259-444-11	CARBON	4.7K	5%	1/6W
R523	1-259-452-11	CARBON	10K	5%	1/6W
R524	1-259-460-11	CARBON	22K	5%	1/6W
R525	1-259-444-11	CARBON	4.7K	5%	1/6W
R526	1-259-452-11	CARBON	10K	5%	1/6W
R527	1-259-436-11	CARBON	2.2K	5%	1/6W
R528	1-259-468-11	CARBON	47K	5%	1/6W
R529	1-259-452-11	CARBON	10K	5%	1/6W
R530	1-259-442-11	CARBON	3.9K	5%	1/6W
R531	1-259-424-11	CARBON	680	5%	1/6W
R532	1-259-464-11	CARBON	33K	5%	1/6W
R533	1-259-464-11	CARBON	33K	5%	1/6W
R534	1-259-452-11	CARBON	10K	5%	1/6W
R535	1-259-452-11	CARBON	10K	5%	1/6W

MAIN **MET** **RE** **RSW** **VOL**

Ref.No.	Part No.	Description				Remark
R536	1-259-468-11	CARBON	47K	5%	1/6W	
R537	1-259-500-11	CARBON	1M	5%	1/6W	
R538	1-259-442-11	CARBON	3.9K	5%	1/6W	
R539	1-259-412-11	CARBON	220	5%	1/6W	
R540	1-259-412-11	CARBON	220	5%	1/6W	
R541	1-259-452-11	CARBON	10K	5%	1/6W	
R542	1-259-452-11	CARBON	10K	5%	1/6W	
R543	1-259-404-11	CARBON	100	5%	1/6W	
R544	1-259-404-11	CARBON	100	5%	1/6W	
R545	1-259-468-11	CARBON	47K	5%	1/6W	
R546	1-259-444-11	CARBON	4.7K	5%	1/6W	
R591	1-259-463-11	CARBON	30K	5%	1/6W	
R592	1-259-456-11	CARBON	15K	5%	1/6W	
R593	1-259-449-11	CARBON	7.5K	5%	1/6W	
R594	1-259-463-11	CARBON	30K	5%	1/6W	
R595	1-259-456-11	CARBON	15K	5%	1/6W	
R596	1-259-449-11	CARBON	7.5K	5%	1/6W	
R901	1-259-452-11	CARBON	10K	5%	1/6W	
R902	1-259-436-11	CARBON	2.2K	5%	1/6W	
R903	1-259-415-11	CARBON	300	5%	1/6W	
R904	1-249-782-11	CARBON	150	5%	1/6W	
R905	1-259-482-11	CARBON	180K	5%	1/6W	
R906	1-259-452-11	CARBON	10K	5%	1/6W	
R907	1-259-436-11	CARBON	2.2K	5%	1/6W	
R908	1-259-468-11	CARBON	47K	5%	1/6W	
R909	1-259-468-11	CARBON	47K	5%	1/6W	
R910	1-259-428-11	CARBON	1K	5%	1/6W	
R911	1-259-428-11	CARBON	1K	5%	1/6W	
⚠R917	1-216-355-11	METAL OXIDE	3.3	5%	1W	F
		< VARIABLE RESISTOR >				
RV401	1-238-016-11	RES, ADJ, CARBON 10K(LED LEVEL L)				
RV451	1-238-016-11	RES, ADJ, CARBON 10K(LED LEVEL R)				
RV501	1-238-013-11	RES, ADJ, CARBON 2.2K				
		< RELAY >				
RY101	1-515-726-11	RELAY				
RY102	1-515-726-11	RELAY				
RY103	1-515-726-11	RELAY				
RY104	1-515-726-11	RELAY				
RY201	1-515-726-11	RELAY				
RY203	1-515-726-11	RELAY				
		< CRYSTAL >				
X301	1-579-069-11	VIBRATOR, CRYSTAL				
X502	1-567-098-00	OSCILLATOR, CRYSTAL				
X503	1-577-121-11	VIBRATOR, CRYSTAL				

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Ref.No.	Part No.	Description	Remark
*	1-642-069-11	MET BOARD	
		*********	
		< DIODE >	
D402	8-759-502-93	LED LD-010DW(CH1)	
D452	8-759-502-93	LED LD-010DW(CH2)	

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*	1-642-072-11	RE BOARD	
		********	
		< SWITCH >	
S101	1-692-020-11	SWITCH, ROTARY	

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*	1-642-067-11	RSW BOARD	
		*********	
		< DIODE >	
D591	1-466-386-11	ENCODER, ROTARY	

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*	1-642-071-11	VOL BOARD	
		*********	
		< VARIABLE RESISTOR >	
RV301	1-241-170-11	RES, VAR, CARBON 20K/20K(INPUT)	
RV302	1-237-306-11	RES, VAR, CARBON 10K/10K(OUTPUT)	

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Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description	Remark
		MISCELLANEOUS	
		*************	
* 19	1-575-940-11	LEAD (WITH CONNECTOR)	
⚠56	1-572-490-21	SWITCH, PUSH (AC POWER) (US, CND)	
⚠56	1-572-530-11	SWITCH, PUSH (AC POWER) (1KEY) (AEP, UK)	
* 63	1-690-057-11	LEAD (WITH CONNECTOR) (2 CORE)	
* CNJ1	1-580-375-21	INLET 3P	
⚠F901	1-532-215-00	FUSE, TIME-LAG (AEP, UK)	
⚠ F901	1-532-739-11	FUSE, GLASS TUBE (US, CND)	
⚠ F902	1-532-215-00	FUSE, TIME-LAG (AEP, UK)	
⚠ F902	1-532-739-11	FUSE, GLASS TUBE (US, CND)	
⚠ F903	1-532-215-00	FUSE, TIME-LAG (AEP, UK)	
⚠ F903	1-532-739-11	FUSE, GLASS TUBE (US, CND)	
⚠ F904	1-532-215-00	FUSE, TIME-LAG (AEP, UK)	
⚠ F904	1-532-739-11	FUSE, GLASS TUBE (US, CND)	
LCD1	1-809-076-11	DISPLAY PANEL, LIQUID CRYSTAL	
⚠ T901	1-450-176-11	TRANSFORMER, POWER (US, CND)	
⚠ T901	1-450-690-11	TRANSFORMER, POWER (AEP, UK)	
**********		**********	
		ACCESSORIES & PACKING MATERIALS	
		********************************	
* 101	4-941-101-01	CUSHION (L)	
* 102	4-941-102-01	CUSHION (R)	
* 103	3-704-343-01	SHEET (STANDARD), PROTECTION	
105	3-754-470-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH) (US, CND)	
105	3-754-470-41	MANUAL, INSTRUCTION (GERMAN, SPANISH) (AEP, UK)	
106	3-754-471-11	INSTRUCTION	
⚠107	1-557-377-11	CORD, POWER (US, CND)	
⚠107	1-590-910-11	CORD SET, POWER (AEP, UK)	
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HARDWARE LIST

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#1	7-682-547-09	SCREW +BV 3X6, S TIGHT
#2	7-682-247-09	SCREW +K 3X6
#3	7-685-870-01	SCREW +BVTT 3X5 (S)
#4	7-685-645-79	SCREW +BTP 3X6 TYPE2 N-S
#5	7-685-105-19	TOTSU PTPWH 2X8, TYPE2, SLIT
#6	7-685-646-79	SCREW +BTP 3X8 TYPE2 N-S
#7	7-621-775-20	SCREW +P 2.6X5
#8	7-682-548-09	SCREW +BVTT 3X8 (S)
#9	7-685-103-19	+ PTPWH (2X5)
#10	7-682-661-09	SCREW +PS 4X8
#11	7-682-548-04	SCREW, TIGHT, S
#12	7-685-133-19	SCREW +P 2.6X6 TYPE2 NON-SLIT (AEP, UK)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Note: Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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DPS-M7

SONY

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E model

SUPPLEMENT-1

File this Supplement with the Service Manual.

Subject:
• REMOTE CONTROLLER DATA FORMAT ADDITION

DPS-D7/M7/R7 Remote Data Format

This document explains the format for data transfer between a DPS series digital effector and the RM-DPS7 dedicated remote control.
A DPS series effector can also be controlled by a personal computer instead of by the RM-DPS7.

Communications format:

- RS422, 1 stop bit, no-parity bidirectional serial communications
- Baud rate: 9600-31,250 bps
- Data format: Same as MIDI, MSB=1 handled as command, MSB=0 handled as data
- Same functions as MIDI running status (high-speed data transmission realized)

Note: "h" in the command and data column indicates hexadecimal and "b" indicates binary.

1. Remote controller → main unit

• Connect request

Transmitted from the remote controller to the main unit when the main unit and the remote controller are connected.

Command : F8h
Data:0000 nnnn b nnnn: remote channel 1-15

• Release request

Transmitted from the remote controller to the main unit when the main unit and the remote controller are separated.

Command : F9h
Data:0000 nnnn b nnnn: remote channel 1-15

• Button and dial information

Transmits the remote controller operating information to the main unit. This command makes possible the same operation with the remote control as with the main unit.

Command : 8kh
Data : 0vvv vvvv b
k: button number
0:LOAD, 1:EDIT, 2:BYPASS, 3:HELP, 4:ENTER, 5:SAVE, 8: DIAL

vvv vvvv:
When k = 0-5, Button status 0: off; not 0: on
When k = 8 Dial click count –63 thru +63
(+ for clockwise, – for counter-clockwise)

Example 1: When the remote controller Edit button is pressed
Command : 81h Data:01h

Example 2: When the remote controller dial is turned one click counter-clockwise
Command : 88h Data:7Fh

• All display request

This requests that the main unit display data (80 characters) be transferred to the remote controller.

Command : AFh
Data : none

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• Memory number change

Preset/user memory can be called out directly from the remote controller.

Command : 1001 00nn b (90-93h)
bit 87
Data : 0nnn nnnn b
bit 654 3210

nnnnnnnnn: memory number data
bit 876543210
For user memory No. 1-256 : 0-255
For preset memory No. 1-100 : 256-355

Example: Calling out preset number 1 from the remote controller
Command : 92h, data : 00h

• ID request

This requests the set ID number from the remote controller.

Command : B7h
Data : none

2 Main unit → remote controller

• Connect OK

Sent from the main unit when a connect request is received from the remote controller.

Command : FAh
Data : 0000 nnnnb nnnn: remote channel 1-15

• Release OK

Transferred from the main unit when the release request is received from the remote controller.

Command : FBh
Data : 0000 nnnnb nnnn: remote channel 1-15

• Display RAM start address

The main unit and remote controller LCD unit has 8-characters of RAM and 240 characters of ROM. Almost all letters, numbers, and codes are stored in ROM, but the headphone icon for edit/compare, the quarter notes for delay parameter editing, " ∘ " for temperature display, help speaker display, etc. are written in the RAM area.

When a pattern is written into the remote controller LCD RAM, this command is transferred from the main unit to the remote controller to specify the start address for that RAM. (The character data is transferred by the display RAM data command.)

Command : A0h
Data : 0ccc ccccb
ccccccc : display RAM start address= 64 - 127

No.	Character code	RAM address ccccccc	Character pattern
0	0000*000	1000000	000*****
		1000001	000*****
		1000010	000*****
		1000011	000*****
		1000100	000*****
		1000101	000*****
		1000110	000*****
		1000111	000*****
1	0000*001	1001000	000*****
		:	:
		1001111	000*****
2	0000*010	1010000	000*****
		:	:
		1010111	000*****
3	0000*011	1011000	000*****
		:	:
		1011111	000*****
4	0000*100	1100000	000*****
		:	:
		1100111	000*****
5	0000*101	1101000	000*****
		:	:
		1101111	000*****
6	0000*110	1110000	000*****
		:	:
		1110111	000*****
7	0000*111	1111000	000*****
		:	:
		1111111	000*****

* = 0 or 1

• Display start address

When the main unit has a request from the remote controller or there is a change in the main unit display, the main unit transfers the display data. The display data is divided into the display start address (where on the LCD to display from) and the display codes (which characters to display). This command sets the remote controller LCD display start address.

Command : A1h
Data : 0aaa aaaab aaaaaaa: display start address
Upper level 40 characters 00h-27h
Lower level 40 characters 40h-67h

LCD character position and address (40 characters x 2 lines)

00h	01h	02h	03h	04h	------	26h	27h
40h	41h	42h	43h	44h	------	66h	67h
0	1	2	3	4	------	38	39

• Display codes and display RAM data

The role of this command depends on the command transferred before it.

When the display start address has been transferred:
Command transferring the display codes
When the display RAM start address has been transferred:
Command transferring the display RAM data

Display code transfer:

Transfers display character codes from the main unit to the remote controller.
Refer to page 4 for List of character data.

Command : 1010 001d b (A2h orA3h)
bit 7
Data : 0ddd dddd b
bit 654 3210 dddddddd: display code
Display RAM area: 0-15
Display ROM area: 16-255

Note: Display RAM area codes display the same characters with 0-7 and 8-15.

Example: Display such as the following is transferred from the main unit to the remote controller.

		D	P	S	------		
		-	D	7	------		
0	1	2	3	4	------	38	39

Upper level display
Display start address transfer
Command : A1h
Data : 02h

Display code transfer
Command : A2h
Data : 44h,50h,53h

Lower level display
Display start address transfer
Command : A1h
Data : 42h
Display code transfer
Command : A2h
Data : 2Dh,44h,37h

Display RAM data transfer:

Transfers data written to the remote controller display RAM from the main unit

Command : 1010 001d b(A2h or A3h)
bit 7
Data : 0ddd dddd b
bit 654 3210
dddddddd: display RAM data = 00-1Fh

Example: Transferring quarter note pattern data
Display RAM start address transfer
Command : A0h
Data : 50h

Display RAM data transfer
Command : A2h
Data : 02h,02h,02h,02h,02h,0Eh,1Ch,00h

• ID data

ID transferred by request from remote controller

Command : BFh
Data : DPS-D7=11h
DPS-R7=12h
DPS-M7=13h
DPS-F7=14h

List of character data

The character data for the DPS series is shown in the following. Refer to the list for creating NAME data. At that time, 0Xh and 7FH represent a control code and a RAM data, respectively, so do not use them as NAME data. In addition, do not use the data for displaying icon as NAME data.